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THE LANCET

A JOURNAL OF BRITISH AND FOREIGN MEDICINE, SURGERY, OBSTETRICS, PHYSIOLOGY, CHEMISTRY, PHARMACOLOGY, PUBLIC HEALTH, AND NEWS.

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FOURTEENTH EDITION.

With the assistance of C. PUTNAM SYMONDS, M.D., F.R.C.P., H. W. BARBER, M.B., F.R.C.P., and R. D. GILLESPIE, M.D., M.R.C.P.

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knowledge of the heart that has accrued, it will not be possible to detect the slightest pain."

"D.A.H." is, from the standpoint of the psychopathologist, the physical result of an emotional state, and as long as we investigate the heart and neglect the emotional state we shall find our results sterile.

A similar impasse has occurred in connexion with that occupational neurosis called miners' nystagmus; for half a century attention has been concentrated upon it as a physical disease (though, strangely enough, no post-mortem examination has ever been reported), and only lately has the psychopathologist been invited to coöperate. The number of fresh cases increased from 386 in 1908 to 2865 in 1920, and local epidemics are still perplexing official circles. Every disabling symptom in the disorder is typically psychoneurotic, and there is no basic difference between the miner with nystagmus and the miner with any other "nervous breakdown."

The influence of compensation plays a part in the increase of this and other disorders, but we must beware of the easy misconception that the sufferers are malingerers. If upon every "nervous" patient were forced the alternative of work or starvation, some would work who now benefit by our increasing care for the sick, others would starve, and some would find a speedier end. The subject is full of pitfalls, and the psychopathologist has to fight on two fronts. He is accused of libelling innocent people by regarding them as "neurotic" when he maintains that their symptoms are due to disorders of feeling or emotion; on the other hand, when he declares that a person is ill in whom no physical disease is present he may be accused of abetting a malingerer. This happened in the war in the case of shell-shock, which was regarded as a physical condition arising from the effect of high explosives, and those clinical psychologists who maintained its mental origin were accused of libelling our brave soldiers; when its mental origin was established the same clinicians had to defend the men from the contempt of those who now declared that the right way to treat shell-shock was to shoot every man that had it.

I lately examined ten miners suffering from "traumatic neurasthenia" (words that are a prostitution of scientific terminology); only two showed signs of physical disease, and in one only did I make a diagnosis of malingering—that is, of wittingly complaining of symptoms that he knew did not exist, in order to avoid work he could properly perform. One or two complained of symptoms that they knew did not exist, but that was because their existing symptoms had never been elicited, and they feared ridicule and unbelief if they disclosed them: clearly they were subjects for the psychopathologist, and not malingerers.

The occupational neuroses, among which miners' nystagmus, telegraphists, and writers' cramp are conspicuous, are of infinite variety. They occur in mill hands in China and in makers of scientific instruments in England, so that you must be prepared to meet them anywhere. Miners' nystagmus and other occupational neuroses, nervous breakdowns, traumatic and many other so-called neurasthenias, "disordered action of the heart," and other physical conditions called neuroses, are all forms of the same problem, insoluble except by informed study of its psychological elements; together they make up a great part of the disability arising from sickness.

We now hear of "tropical neurasthenia," and I have listened to a discussion of the subject that showed how fatal to the communication of ideas was the fact that none of us had been taught what symptoms to look for and how to describe them. I have lived for ten years in tropical and subtropical countries and suspect that tropical neurasthenia will come under the same general formula that covers other occupational neuroses. There is already evidence that the study of temperamental reactions in selecting personnel might reduce the incidence of occupational neuroses, and this principle has been successfully applied in at least one firm with extensive eastern connexions. Here I am reminded that Messrs. Farmer and Chambers, following up statistical work demonstrating that there is an accident-prone section of workpeople, have shown the possibility of detecting the members of that section by objective tests.[2] Dr. May Smith and myself, working on other lines, believe that we can also detect these people, and that we shall be able to link up the objective findings with temperamental or psychoneurotic qualities.

I hope I have made it clear that you are likely to meet problems understandable only by a study of the human being as something more than the sum of his physiological reactions.

PULMONARY TUBERCULOSIS IN GENERAL PRACTICE,

WITH SPECIAL REFERENCE TO THE DIAGNOSIS OF THE EARLY CASE.*

By W. Burton Wood, M.D. Camb., M.R.C.P. Lond.,
PHYSICIAN TO OUT-PATIENTS, CITY OF LONDON HOSPITAL FOR DISEASES OF THE HEART AND LUNGS, VICTORIA PARK.

"So I brought her to hospital so as you could put the X rays on her chest, and find out what really is the matter." (Out-Patient's Mother.)

We have heard much in late years about the decline in the mortality from pulmonary tuberculosis. Propagandists claim that the Captain of the Men of Death is himself a-dying, and even though the account of his death, like that of Mark Twain, may have been grossly exaggerated, the statistics and graphs of public health departments clearly show a steady fall in the death-rate from tuberculosis in both sexes and in all age-groups—with one notable exception. Even a casual survey of the figures reveals the profoundly disquieting fact that females in the later years of adolescence and in the early years of adult life have not shared in the general improvement. In some districts the death-rate has even increased in the 15–25 age-group. The cause of this special susceptibility of young females is unknown. It may be Nature's comment on the modern assumption that men and women are fitted to do the same work. In general, girls of to-day live a healthier life than those of yesterday. In less than a generation increased opportunities for exercise and fresh air have abolished chlorosis, the malady once most incident to maids, and the only recent change in the life of young women that might have been expected to affect health adversely has been that from the shelter of domestic to the stress of factory and office life. It is noteworthy that the only effective treatment of tuberculosis is rest. Girls engaged in business hardly know the meaning of the term. It is possible that a clue may

[2] A Study of Personal Qualities in Accident Proneness and Efficiency, Industrial Health Board Report, No. 55.

* Being the substance of a lecture given to post-graduates at the hospital.

be found here. However, the problems of preventive medicine do not directly affect the general practitioner, whose primary concern is the diagnosis and treatment of disease.

Every practitioner knows that the only hope for the young consumptive lies in early diagnosis and immediate treatment. What do we mean when we speak of early diagnosis and what treatment can we offer to our patients with any confidence as to its efficacy?

The Importance of Radiology.

Sir Norman Moore in reminiscent mood used to tell his students of a physician of the old school who carried a stethoscope, not from any personal conviction of its efficacy as an aid to diagnosis, but in deference to the prejudices of his younger colleagues. We used to smile. Yet the old gentleman doubtless felt like the hero of "Milestones" that no one could call *him* conservative. The tenacity with which we cling to the teaching of our student years is a tribute to those who laid the foundations of our professional knowledge. We remember the days when we were taught that scientific instruments could never replace clinical observation, when with infinite labour we strove to master the difficulties of palpation, percussion, and auscultation. The clinical pictures we formed were based on the information thus obtained. It is difficult to learn. It is sometimes more difficult to unlearn. Yet the time has come when we must recognise that chest radiology has proved that much of the former teaching was wrong. The X ray tube is a more searching and a far more accurate instrument than Laennec's tube. If we neglect to use it so far as we can, we are guilty of repeating the folly of the old physician. The only difference is one of a milestone. The methods of physical examination are, indeed, still necessary, but their intelligent application is only possible when we have learned to correlate sounds with shadows. Percussion and auscultation supply circumstantial evidence, and circumstantial evidence is often that on which judgment must be based, but Radiology supplies more direct evidence. It enables us, in common phrase, "to see for ourselves." It is true that the radiologist's pictures are only shadowgraphs, but his art is constantly improving. There is as much difference between a chest skiagram taken five years ago and one taken to-day as there is between an early Victorian daguerreotype and a Bond-street portrait-photograph. The picture of the bronchial tree following an injection of lipiodol will usually supply more convincing evidence of the condition of the lung tubes than direct vision with the bronchoscope. Further, apart from the use of X rays we can now with the aid of the thoracoscope inspect the pleural cavity, the collapsed lung, and the pericardium during life. Thus though we are not yet able to dispense with any diagnostic aids, though a careful clinical examination must still be the prelude to any investigation, we can look forward with confidence to the day when instruments of precision will dispense with the need for tests largely dependent upon personal factors.

Before showing how radiology has altered our conception of the meaning of the term "early disease" let us briefly consider the position before X rays had illuminated our darkness.

Former Fallacies in Diagnosis.

A friend who had had special opportunities for studying pulmonary disease before the war recently wrote concerning a patient sent for examination, "this is the kind of case I should once have thought myself clever about, but to-day I'm not sure if I am not making a fool of myself." The remark was shrewd. We used to think ourselves very clever in the days when, ignoring the stethoscope as too obvious a means of investigation, we practised the art of light percussion of the lung apices, and like Dr. Knock, found the beginnings of disease in every patient who approached us.

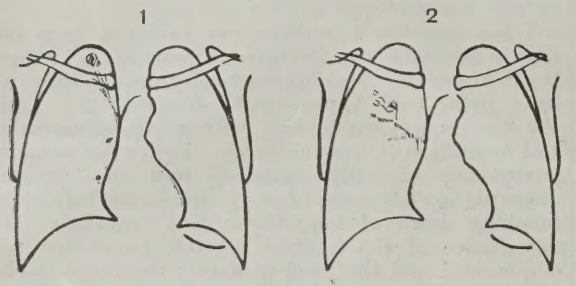
What was the impression we gathered from our text-books and clinical lectures 20 years ago? Phthisis began at one or other lung apex and spread downwards by a process of "apico-caudal progression." Once the disease was established with resulting caseation and cavitation it was incurable. Hence the supreme importance of early diagnosis and the constant attempts to elicit signs of early infiltration before any breaking down of lung tissue had occurred. The importance of the lightest possible percussion was emphasised and the need to detect the finest shades of difference in pitch or resonance in the supraclavicular areas. The unmusical were bewildered by dissertations on the varying quality of tones that might be elicited. In auscultation we were taught to take note of the slighest differences in breath sounds. Slight weakening of inspiration at one apex or a roughening of the breath sounds or a catchy quality might all be significant of disease. At the same time allowance had to be made for the physiological difference between the signs normally present on the two sides. This was bewildering, for if we found the breath sounds at one apex slightly weaker than those at the other we remained in doubt which side was affected—the left apex where the sounds were weaker or the right where they were harsher.

Further refinements in examination were developed. Braces of relative resonance crossing the shoulders or back were mapped out. Their width duly recorded in centimetres made us feel that at last physical examination had some claim to be regarded as an exact science. Also skin pencils to mark the limits of resonance and closed eyes during percussion were calculated to impress the patient. We shook our heads if one Krönig's band proved half a centimetre less than its neighbour. The finding of tubercle bacilli in the patient's spit, even the hearing of crepitations, were evidence of gross neglect on the part of someone. In such a case if things went wrong—and they usually did go wrong—we could console ourselves with the reflection that the patient had been sent to us too late for effective treatment. So the cult of "the early case" began and "cures" were multiplied. Indeed, there are still those who maintain that pulmonary tuberculosis is the most easily curable of diseases. The general practitioner who knows that most of his young consumptive patients die within a few years of the onset of symptoms may well be sceptical. If we exclude mild latent infections, primary infections of the childhood type, lesions situated above the clavicle, and certain of the more chronic fibroid types of the disease occurring in later life, pulmonary tuberculosis remains one of the most fatal of all diseases and one of the most difficult to treat, even in its early stages.

Modern Radiological Developments.

Early chest radiograms revealed the thoracic cage against a murky background. The shadow of the heart was obscurely seen with an ill-defined smudge about the size of a walnut on either side of it, representing the structures in connexion with the lung root. From each of these obscure linear striæ radiated for a few centimetres before becoming lost

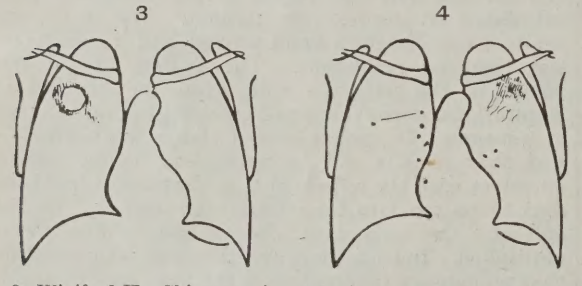
in the darker fields representing lung parenchyma. Anxious to assist the clinician in his search for evidence of early tuberculous infection, the radiologist reported "woolly hilar hadows" and "peribronchial" striations as evidence of incipient disease. For a time confusion was worse confounded, and it was not



1. Gladys K. Age 14. Healed true apical infection. No spread during four years' observation.
2. Winifred K. Age 23. School teacher. Three weeks from onset of cough. Previous health good. No tubercle bacilli found.

till the general adoption of the metallix tube, the employment of a time-switch, and of standardised distances that films could be taken under constant conditions and with optimum results.

The modern skiagram shows the cardiac shadow with clearly defined margins, the compact, though ragged, shadows of the glands and vessels of the lung roots, the trachea and its bifurcation, the broncho-vascular shadows spreading into the lung fields like the branches of a tree, their subdivisions visible till as slender as silk threads they reach their terminal ramifications. The lung parenchyma between these linea striæ forms a delicate grey background, a background against which any abnormality due to inflammation is easily detected. And, though the



3. Winifred K. Skiagram six weeks from onset of symptoms. No T.B. found. (After induction of artificial pneumothorax one positive sputum was obtained. Thereafter no T.B. were found.)
4. John B. Age 16. April 10th: "Influenza." May 12th: T.B.+. Skiagram of May 21st shows subclavicular mottling on left. No significant physical signs found on examination of chest. Note Glion's focus in right middle zone and numerous small calcified nodes. Father suffers from phthisis.

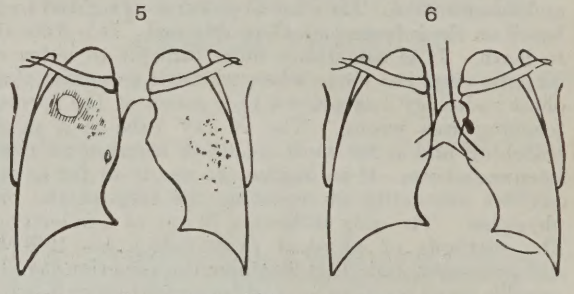
healthy pleura is invisible, any thickening is at once made evident as a marginal line or uniform clouding.

CORRELATION OF RADIOLOGICAL EVIDENCE AND PHYSICAL SIGNS.

Radiology has shown that the common onset of pulmonary tuberculosis of the type under discussion is an area of broncho-pneumonia situated below one or other clavicle, and revealed as a small area of coarse mottling in the centre of which a circular clear area may often be seen indicating breakdown of the lung tissue with resulting cavitation. This is the usual picture (Figs. 2, 3, 4, and 5). Less commonly heavier shadows in the lower lobe reveal basal tuberculosis. Occasionally a film shows supra-clavicular shadows due to apical tuberculosis, a relatively benign form tending to heal spontaneously (Fig. 1).

Still more rare is the "snowstorm" appearance due to miliary tuberculosis in which all areas of the lung fields exhibit a fine stippling. Radiology has shown that miliary tubercle is not inevitably fatal unless it is part of a tuberculous septicæmia. Somewhat similar are the pictures of disseminated tubercle which gives rise to coarser granular opacities, each of which may become calcified though fusion and breakdown are more commonly seen. Pleural infections, so often the forerunners of parenchymatous involvement, are not considered here.

Radiology thus confirms the old teaching of Kingston Fowler, that the first lesions of pulmonary tubercle are not usually apical, but are situated about one and a half inches below the summit of the lung. When first seen on the film, such an area may be no larger than a sixpenny-piece, but its spread is often



5. Florence P. Age 28. Sister died of phthisis. Large cavity in right subclavicular area. Physical signs: slight impairment of percussion note over right upper lobe and an occasional clicking râle below clavicle. No significant signs in right lung where skiagram shows tuberculous mottling.
6. Barbara J. Age 10. Skiagram of May 25th: Calcified tracheobronchial gland.

rapid, and within two or three weeks a considerable part of the upper lobe may be involved, and cavitation have commenced, as shown by a circular clear area in the centre of the mottling (Figs. 2 and 3).

In the stage of early infiltration, physical examination may fail to reveal any significant physical signs of disease (Fig. 4). Even when cavitation has occurred, the signs may be absent or slight (Fig. 5).

Older clinicians used to speak of the "silent cavity." We now know that the classical signs of cavitation are only found in exceptional cases. We may often infer the presence of a cavity from impairment of percussion note, slightly harsh breath sounds, sharp crepitations and the finding of tubercle bacilli and elastic fibres in the sputum, but bronchial or cavernous breathing, tinkling râles, cracked-pot sound or post-tussic suction, are only heard in certain cases of large cavities with patent bronchi. For practical purposes, more than 50 per cent. of cavities are absolutely or relatively silent, and if cavities are often silent it is obvious that areas of early infiltration may be equally so. If we place too much reliance on physical signs we shall inevitably miss many cases of early disease at a time when treatment might be effective. It is, perhaps, unnecessary to add that X rays have shown that the refinements

of physical examination formerly practised are of no value.

Here is an example of the superiority of X ray examination over physical examination. I recently admitted to hospital a girl aged 16 years suffering from asthma. A skiagram showed a large calcified gland at the left lung root, the result of spontaneously arrested tuberculous adenitis (Fig. 6). Such a gland gives rise to no abnormal physical signs. A few weeks later her sister aged 3 years was brought to see me. The only abnormal sign was a slight impairment of the percussion note at the base of the right lung. The breath sounds over this area were normal, and the child's appearance was healthy (Fig. 7). A skiagram showed pleurisy of the right side, the surface of the lung being covered by a thin layer of fluid or thickened pleura, the interlobar fissure being also involved. The condition was almost certainly tuberculous. Here, then, were two children in the

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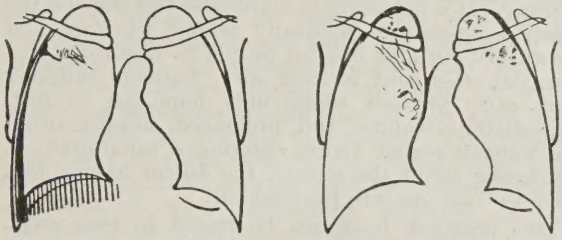

7. Doreen J. Age 3. Skiagram of July 8th: Pleural effusion on right side. Note involvement of interlobar septum and raised diaphragm.

8. Mrs. J. Mother of Barbara and Doreen (Figs. 6 and 7). Skiagram of July 10th: T.B. found. Pulmonary fibrosis with shrinking of right upper lobe. Softer mottling below left clavicle indicates more recent disease.

same family suffering from a mild tuberculous infection, in one case healed and in the other still active. The mother denied symptoms, but consented to be examined (Fig. 8).

There was slight impairment of note over the summit of the right lung and a few coarse râles could be heard at the apex. A skiagram showed definite evidence of a tuberculous fibrosis of both lung apices, the appearances being those of a very sluggish type of infection. Tubercle bacilli were later demonstrated in the sputum. Without the aid of radiology the tuberculous gland could not have been detected, the pleurisy might have been overlooked, and thus no attention bestowed on a hitherto unsuspected source of infection.

RADIOLOGY AND THE PRACTITIONER.

While insisting on the importance of X ray examinations, we must not forget that few general practitioners have access to radiological departments. Further, chest radiology is a highly specialised branch of the science, and few radiologists have had the special opportunities necessary for obtaining chest films of the best quality, and for the difficult task of their interpretation. A poor skiagram of the chest is worse than useless. If the shadows are not clearly defined the picture will be misleading For example, the margins of areas of healed tubercle are sharply defined. If definition is at all blurred, a healed area will be indistinguishable from active disease, or even the normal lung markings mistaken for the mottling of tuberculous infection, an error not infrequently made by radiologists whose technique is faulty and whose experience is limited.

Diagnosis without the Aid of Radiology.

SUGGESTIVE SYMPTOMS.

(*a*) The patient's manner should be studied. A tendency to make little of symptoms, to resent any concern being shown, and to insist that there is nothing

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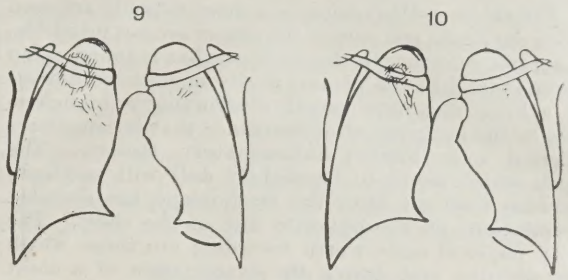

9. Ruby C. Age 27. Black Notley Sanatorium. Skiagram on admission, November, 1928: Large cavity in right upper lobe. T.B. present. Treatment by rest.

10. Ruby C. Skiagram of February, 1929: Cavity reduced to about a third of the original size by rest treatment.

the matter is a characteristic of the consumptive patient. (*b*) A history of "pleurisy" is so common and is so frequently due to erroneous diagnosis that little importance can be attached to it, but a history of pleurisy with effusion should be regarded as definite evidence of a previous tuberculous infection, unless known to be due to some other cause. (*c*) A history of close contact with a case of phthisis is not likely to be ignored by the family practitioner. (*d*) The young consumptive frequently dates her symptoms from an attack of "influenza." A febrile attack resembling influenza in a young person should always suggest the possibility of incipient tuberculosis. (*e*) Cough accompanied by expectoration and persisting for more than a week is an indication for a sputum examination. If expectoration continues,

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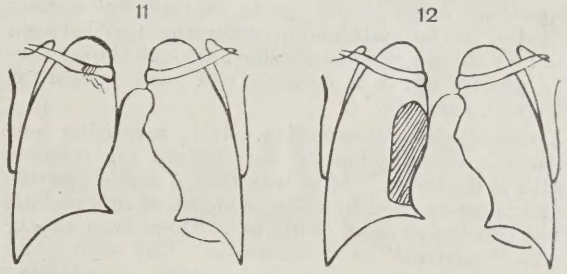

11. Ruby C. Skiagram of October, 1929: Cavity completely closed.

12. Winifred K. (see also Figs. 2 and 3). Less than a month after induction of pneumothorax on right side. The skiagram gives no evidence of the collapsed cavity.

at least three sputum tests should be made. (*f*) Lassitude often precedes and usually accompanies the cough, and is another warning symptom. (*g*) Hæmoptysis in a young person should always be regarded as due to tuberculosis, unless some other cause can be found. (*h*) Persistent loss of weight is a suggestive symptom.

PHYSICAL SIGNS.

Inspection.—In cases of chronic fibroid disease local retraction of the chest wall and diminished expansion are obvious, but as a rule little is to be gained from inspection of the chest of the early case.

Palpation.—The claim has been made that incipient disease may cause tonic contraction of the overlying chest muscles, but in my opinion this sign has not much value in diagnosis. Vocal fremitus is unaltered over early infiltrations. It is, of course, increased over solid lung whether due to fibrosis or an extensive area of broncho-pneumonia.

Percussion.—Percussion is a most difficult art, and even the hands and ears of the expert are not infallible. I am not referring to the dullness that is found when there is fluid in the pleural cavity or massive fibrosis of a lung or a new growth obstructing a bronchus, but to the impairment of resonance that is sometimes elicited over limited inflammatory lesions. The apex which seems to be slightly dull will suddenly become resonant after the stethoscope has revealed crepitations on the opposite side of the chest. The only physical signs worth recording are those which are definite, and during the examination of a chest imagination must be rigorously repressed.

Auscultation.—The most significant physical sign in the diagnosis of early phthisis is the hearing of crepitations. Their usual site is below the clavicle or in the axilla or internal to the spine of the scapula. Sometimes owing to conduction they are heard best above the clavicle. The character of the crepitations heard over an area of tuberculous infiltration is almost diagnostic. They differ from the coarser râles due to a simple catarrh and from the fine dry crackles often heard over the apices of middle-aged women which are due to the forcible expansion under examination of areas of lung normally atelectatic. A cough will often be required to "bring out" crepitations, and auscultation should always include examination during inspiration after coughing. Sometimes in the absence of crepitations a weakening of inspiration is a suggestive sign, but in most cases of early disease crepitations can be heard if the examination is sufficiently thorough. They are, however, often difficult to pick up, and if the disease is deep-seated have a distant and sticky quality. Isolated *temperature readings* are apt to mislead, but a daily record of the late afternoon temperature (say between 5 and 6 P.M.) can often be obtained through the services of a district nurse or midwife, and such a record is obviously valuable.

Bacteriological Examination.—It is surprising how often the examination of the sputum for tubercle bacilli is neglected. It is true that a single positive finding unsupported by other evidence of tuberculosis is not conclusive proof of disease. There even appear to be "carriers" of tuberculosis. But such cases are extremely rare, and the sputum examination remains the simplest, the most easily applicable, and on the whole the most valuable single test at our disposal. The practitioner who fails to apply it on every suitable occasion has omitted to complete his examination.

THE BIG FIVE.

During the winter rush of work, when the surgery is crowded and almost every patient complains of a cough, elaborate physical examinations are impossible. Yet when a young person of either sex complains of a cough with expectoration, tuberculosis must always be borne in mind. It can be excluded with some confidence if five negative conditions are satisfied.[1] It is unlikely that tuberculosis is responsible for the cough if: (1) there is no history of pleural effusion; (2) there is no history of hæmoptysis; (3) no crepitations are heard after coughing in any danger zones; (4) *no tubercle bacilli are found in three successive sputum examinations;* (5) X ray examination is negative.

If the first four conditions are satisfied a short period of observation with expectant treatment may suffice, but if the practitioner's suspicions are aroused by the patient's appearance or manner, by a history of contact with infection, or by the continuance of symptoms for more than a fortnight, a skiagram is essential. If the services of a radiologist with special experience in chest work are not available a second opinion should be obtained. In some cases a short period of institutional observation may be advisable. In every efficient sanatorium beds are set aside for the reception and investigation of doubtful cases.

Treatment.

The treatment of all forms of tuberculosis is rest. Despite the claim preferred on behalf of innumerable specifics rest remains the only effective form of therapy. It is necessary to emphasise this because the reaction against hermetically sealed windows and drawn bed-curtains has led people to think that the essential treatment is fresh air. Patients suffering from early phthisis whose only hope lies in rest, immediate, absolute, and prolonged, usually spend the waiting period before entering a sanatorium in wandering about the streets, the doctor having told them to "get out into the fresh air."

The diseased lung can be rested in two ways. If the disease is limited to a small area, if time is no object, and if the patient's patience is unlimited, rest in bed may be sufficient. Even a large cavity may heal with no other treatment than rest for a period of some months (Figs. 9, 10, and 11). In other cases recumbency for two or three years may be necessary to secure arrest of disease. But such healing can only be expected in favourable cases. The resting period can be shortened, and in most instances far more effective relief to the diseased lung can be secured by artificial pneumothorax and other forms of collapse therapy (Fig. 12). There are still sanatoria where this kind of treatment is neglected. At such institutions patients realise months of boredom punctuated by the injection of such animal, vegetable, or mineral poisons as may have taken the fancy of the staff. Unless the disease is already advanced when the patient first comes under treatment the chance of recovery is at least doubled by artificial pneumothorax. Even the apparently hopeless case may be restored to fair health and a measure of activity by this means and the incurable maintained in reasonable comfort for prolonged periods. Recent improvements in technique have enabled us to obtain a satisfactory collapse of the lung despite the presence of adhesions, for these can now be safely divided by the diathermy cutting cautery under thoracoscopic control, and even cases in which artificial pneumothorax has failed owing to universal adhesions may be saved by the modern operation of external pneumolysis or thoracoplasty.

No mention has been made of the various schemes of the public health authorities for the diagnosis and treatment of tuberculosis, for these are outside the scope of the present paper. But it should not be forgotten that the tuberculosis officer can render aid in providing a second opinion, arranging for radiological or other special examinations, and in securing sanatorium treatment for patients. An efficient tuberculosis officer may thus prove a valuable ally.

[1] Brown, Lawrason: Jour. Amer. Med. Assoc., 1928, xc., 1032.

THROMBO-PHLEBITIS MIGRANS.*

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THE occurrence of cases of phlebitis with thrombosis, sometimes widespread and recurrent but lacking any clear ætiological associations, has long been recognised. Such cases, although not common, are by no means excessively rare. They are distinct both in their history and their course from those forms of thrombo-phlebitis which complicate the specific fevers or follow operations and the puerperium, or which have been recorded in connexion with syphilis, tuberculosis, malignant disease, and anæmia. They are not due to varicosity or other chronic disease of the veins. It is possible that some of the cases of phlebitis formerly ascribed to gout may have belonged to this special group. Sir James Paget [1] reported cases of diffuse superficial phlebitis, both gouty and non-gouty, as long ago as 1866. More recently an interesting account of four cases has been given by Moorhead and Abrahamson,[2] under the title of "Thrombo-phlebitis Migrans," in three of which wandering superficial thromboses of this kind were accompanied by visceral thromboses. Five similar cases, four of them with visceral thromboses, have come my way, and I am sure it will be in the experience of others to have encountered examples of this condition from time to time in the ordinary course of practice. Campbell and Morgan [3] have lately recorded a case of brachial thrombo-phlebitis complicated by severe headache and tubular vision, due possibly to thrombosis of posterior cerebral vessels, and also by cardiac symptoms with cardiographic findings suggesting a coronary thrombosis. Carey Coombs [4] has mentioned cases of coronary thrombosis in association with peripheral phlebitis, including one case in which a pulmonary and then a cardiac thrombosis preceded thrombo-phlebitis in the thigh. Briggs [5] and Herrick [6] have reviewed the subject of wandering phlebitis, but they gave no account of visceral lesions.

The name thrombo-phlebitis migrans seems to me admirably suited to the condition. The process is essentially migratory, the lesions showing dissemination both in space and time, as will be seen from an examination of the case reports given hereunder. The same nomenclature has been applied to a rarer condition in which the phlebitis spreads gradually along the course of a particular vein or veins. As, however, this may be described more correctly as a "creeping" than a "wandering" process, it would seem that thrombo-phlebitis migrans is more appropriate to the disease under discussion.

Moorhead and Abrahamson expressed themselves as unable to throw any light on the ætiology of the condition. In one of their cases, it is true, the first superficial phlebitis followed a mosquito bite on the same limb after an interval of a week; a month previously, however, the patient had had an unexplained pleurisy which, in the light of later events, may well have been due to a primary pulmonary thrombo-phlebitis. In another case the first phlebitis occurred in the leg three months after a superficial burn on the corresponding foot. In a third there was severe pyorrhœa. Owen [7 8] has sought to associate the condition with influenzal epidemics, but in none of my cases nor in those described by Moorhead and Abrahamson was there any good reason to suspect influenza as an ætiological factor. I am more inclined to agree with him when he suggests that many of the obscure pleurisies of practice associated with red hæmoptysis are due to small pulmonary thromboses of infective origin.

The cases which I propose to describe confirm and amplify the observations of Moorhead and Abrahamson and also serve to indicate some of the difficulties in diagnosis which may arise over the visceral lesions. One case is included in which there were symptoms of visceral thromboses without the involvement of any superficial vein. In three of the five cases there was good reason to suspect the influence of chronic focal sepsis. The period within which symptoms of wandering thrombo-phlebitis continued to arrive is indicated in brackets at the heading of each case.

Report of Five Cases.

CASE 1. *Thrombo-phlebitis affecting both legs* (1924–27).—A young man, aged 23, previously in robust health, first developed phlebitis in the calf of the right leg in 1924. This was slow to mend, and he eventually had the vein excised. He was then well until the first week of October, 1927, when he again developed phlebitis in both legs. A fortnight later he was found to have a tender molar tooth. This was extracted. When I first saw him in consultation with Dr. C. Sherris on Nov. 27th, 1927, the legs had cleared completely, but he had just developed a fresh phlebitis involving a short segment of one of the veins on the dorsum of his right foot. At one time he had had an enlarged epitrochlear gland, but there was no history of syphilis, and the Wassermann reaction was negative. There was no gouty history. A differential blood count showed no abnormality. Clotting time was normal. Mr. Kelsey Fry, on clinical and radiographic evidence, advised the extraction of four dead teeth, and reported as follows: "Three of the dead teeth that I have extracted showed marked apical absorption, and as they had never been filled, I must presume the infection was blood-borne. Were th y the cause of the thrombosis, or are they due to the same cause?" Two years and a half have now elapsed without any further symptoms of phlebitis or other ill-health.

CASE 2. *Thrombo-phlebitis affecting one leg, both lungs, and intra-abdominal veins* (March–July, 1924).—A man, aged 58, was submitted to my care by Dr. T. D. H. Holmes for phlebitis of the right leg, which had already necessitated his lying up for a month.

For some months previously he had felt "out of sorts" and disinclined for work, but he had had no other illness of importance. For ten days prior to my first seeing him he had had an almost continuous stomach-ache, but in the last two days both this and the leg discomforts had definitely improved. The stomach-ache throughout had been aggravated by deep breathing which caused "a sensation of something raw or of friction within the abdomen." Ten days after his admission to the nursing-home he developed pleuritic pain at the left base, with pyrexia and slight hæmoptysis and a leucocytosis of 27,000 cells per c.mm. During the following week he developed friction patches at the right base and over the left upper lobe in front. His sputum was always red and not "rusty." A pleuritic effusion followed on the left side, the aspirated fluid showing red cells, lymphocytes, and polymorphonuclear cells in about equal proportions. For a time before expectoration ceased the sputum became malodorous, coming presumably from a breaking down infarct. Finally, after an illness lasting four months, he made a complete recovery.

It should be noted that the pulmonary symptoms first developed when the leg symptoms had almost subsided, and roughly six weeks after the first sign of peripheral phlebitis. It seems reasonable to argue

* Based on a communication given before the Association of Physicians in London on June 6th, 1930.

from the sequence of events, as well as from the analogy of other cases, that the bilateral pulmonary symptoms, and possibly the upper abdominal symptoms, were here expressive of a wandering thrombo-phlebitis, similar to that which had occurred in the leg.

CASE 3. *Thrombo-phlebitis of left leg, left lung, and right foot* (Dec. 1st, 1929, to middle of January, 1930).—An overworked medical man of middle age and fine physique had a serious breakdown in health at the beginning of 1928.

His illness started with obscure fever and diarrhœa. In the previous year he had sought advice for some minor anginal symptoms, and had had tenderness over the gall-bladder. He was carefully investigated in a clinic where he was found to have gastric achylia and some dental sepsis. Later he became very anæmic, and was thought by one physician to have pernicious anæmia. The glands in his neck became enlarged. Eventually, after some dental extractions, he lost his symptoms and returned to work, remaining well throughout the summer and autumn of 1929.

I was called to see him on Dec. 1st, 1929. He had then been confined to bed for ten days with phlebitis at the back of the left knee, which came on after sitting with crossed legs at a theatre. For the past two or three days he had had soreness, fullness, and flatulence in the epigastrium. On Nov. 30th he began to have violent and agonising spasms of pain in the left lower chest, suggesting to him and to me spasms of the diaphragm and lower intercostal muscles. These were induced by the slightest movement of his trunk, and he preferred to remain upright in a chair scarcely daring to move. His breathing was shallow and quick. There was slight crowding of the ribs on the affected side with deficient movement and entry, but little or no impairment of note and no audible friction. The inflamed portion of vein in the leg was not more than two inches in length and quite superficial, and there was no evidence of extension to larger or deeper vessels. The temperature did not exceed 100° F. I diagnosed pulmonary thrombo-phlebitis.

On the next day he started to have some small hæmoptyses and simultaneously developed a fresh phlebitis on the dorsum of his right foot. Excepting for transient pains in the left axilla and the left loin he had no further symptoms suggestive of visceral involvement, but progress to complete recovery was interrupted by five other very small thromboses affecting superficial veins of the left leg and foot. During the earlier phase of the illness a blood culture was negative; the leucocyte count was 12,200 cells per c.mm., whereas he had always previously shown a marked leucopenia; a *Streptococcus viridans* was grown from the sputum. Radiograms later showed marked opacity of the right antrum, a doubtful right frontal sinus, and three definitely infected teeth. The infected teeth were extracted. The last thrombosis followed a few weeks after the extractions.

It seemed reasonable to suppose that this wandering thrombo-phlebitis was a late sequel of his septic illness of the previous year, and due to lingering focal infection. There was no reason to consider gout as a factor.

CASE 4. *Thrombo-phlebitis affecting both legs, both lungs, and a cerebral vein* (1924–29).—On April 13th, 1929, I was asked to see, in consultation with Dr. G. T. Cregan, a spinster, aged 53, who gave the following history.

In 1897 she had rheumatic pericarditis. In 1907 she had herpes of the scalp and developed anginal attacks for which she saw Sir James Mackenzie. During the war period, in which she was employed with arduous and responsible duties, she became unfit for a time, and a streptococcus was grown from the urine in 1915 and again in 1917. In 1919 she had a return of anginal pain and severe streptococcal infections of the throat. Between 1919 and 1924 she was treated with vaccines. In 1924 she had an acute illness with anginal symptoms, rigor, a pulse-rate of 140, thrombosis in the left leg, and bilateral pulmonary "embolisms" with hæmoptysis. In January, 1925, she had otitis media. In May, 1928, she had a septic throat and right-sided "pleurisy," and coughed up a little blood. In September, 1928, she felt stiff in her left face, her left hand became "woolly," and she was sick. She was at this time in bed for a month with slight fever. By November, 1928, she was again very ill with hæmoptysis, and some sterile fluid was aspirated from the right chest. Her sputum grew Friedländer's bacillus, streptococci, and pneumococci. In December, 1928, she had a new thrombosis in the left leg with œdema. In January, 1929, the right leg became affected, with red patches and a tender point in the groin.

The patient was of obese habit, and at the time of my examination both legs remained slightly swollen. Her tonsils were very unhealthy. Grip and power of discrimination were poorer in the left than the right hand. There was a family history of erysipelas affecting her mother, one uncle, one aunt, and a brother. I saw her again in February of this year, when she had had another attack of tonsillitis with quinsy, but no further phlebitis.

CASE 5. *Thrombo-phlebitis affecting abdominal and pulmonary veins* (April–July, 1929).—A burly, broad-chested coal magnate, aged 49, after fishing in Scotland, became shivery and unwell, but decided to travel by road to his home in the south of England. The next day he had epigastric pain.

He arrived home on April 28th, 1929, with a temperature of 102° and pain in the upper abdomen aggravated by coughing and deep breathing. The abdomen was then soft and flaccid. By May 1st, however, it became tense and distended, and there were some rose-coloured spots. At this time attention was focused on his abdominal condition, and a few days later his doctor, Dr. L. Leslie, called in Mr. J. L. Joyce for a surgical opinion. The possibilities discussed included typhoid fever, cholecystitis, pancreatitis, and an inflamed retrocæcal appendix. The pulse-rate did not exceed 76. There was no diarrhœa and no splenic enlargement. Blood cultures remained sterile and Widal's test was negative. Total and differential leucocyte counts showed no abnormality. By May 5th the temperature was falling.

On the evening of May 6th he was seized with very severe pain between his left costal margin and the left scapula. At frequent intervals during the next 24 hours he had agonising constricting pains in the epigastrium so that breathing was shallow and difficult and he dared not move. Simultaneously the temperature rose to 103° and the pulse to 100. A slight occipital headache transferred itself to the frontal region. Leucocyte count 18,000 cells per c.mm. I saw him at 10.30 P.M. on May 7th with Dr. Leslie and Mr. Joyce. Now and then he had bad spasms of epigastric pain which caught his breath. There were no signs of cardiovascular disease. There was general distension of the abdomen, but no spots remained. Excepting for showing crowding of the left lower ribs with slight impairment of movement, the physical examination was otherwise wholly negative.

I was asked to see this patient again on June 3rd at the end of the sixth week of his illness. After my previous visit the temperature had at first gradually settled, but then rose again with a return of pain and the development of an effusion at the left base. For a few days bright blood was expectorated. On May 30th the temperature had fallen to normal. Two days later it rose again, and on June 2nd there was a slight rigor together with a new agonising pain below the right nipple; it is noteworthy that during the previous week the patient had experienced a pain at this point on coughing or sneezing. The condition of the abdomen had improved in the meantime. There was no enlargement of liver or spleen. Blood culture negative. Sputum examination negative. The fluid previously withdrawn from the left chest was slightly turbid and blood-stained, showing red cells and leucocytes in the deposit, but was sterile on cultivation. A fresh effusion on the right side now gave exactly similar fluid.

I diagnosed wandering pulmonary thromboses. The violent spasmodic pains were exactly like those described in Case 3. The fluid was characteristic of pulmonary infarction and like that obtained in Case 2. The red hæmoptysis was typical of infarction. At no time was there anything suggestive of an ordinary pneumonia. I am inclined to the view that the earlier abdominal symptoms were also due to visceral thromboses. Although in the foregoing notes stress has been chiefly laid upon the pulmonary manifestations, it should be mentioned that the advisability of laparotomy was discussed on more than one occasion, and there were several other consultations, at which I was not present, with regard to the proper interpretation of the abdominal symptoms. The patient made a complete recovery.

Discussion.

In the group formed by these five cases, together with six others recently described in some detail in the English literature (Moorhead and Abrahamson 4, Campbell and Morgan 1, Carey Coombs 1) there were eight examples of pulmonary thrombosis; four clear or presumed examples of abdominal thrombosis; three probable examples of cardiac and two of cerebral thrombosis. Although two of my patients had had anginal symptoms I was not satisfied that these were attributable to coronary thrombosis. In addition to involvement of both upper and lower limbs, Moorhead and Abrahamson also reported cases with thrombo-phlebitis affecting the face and the abdominal wall.

In those cases in which pulmonary symptoms have followed phlebitis in a limb it might be reasonably suggested that the symptoms were due to small embolisms and not to thromboses. Against this view are (1) the sequence "left leg, left lung, right foot" in Case 3; (2) the late arrival of the lung symptoms in Case 2; and (3) the occurrence at one period in Case 4 of thrombotic lung symptoms independently of any recent superficial phlebitis. In Case 5 there were symptoms of pulmonary thrombo-phlebitis without any superficial lesion, but there may have been abdominal thromboses. In the case described by Carey Coombs the peripheral thrombo-phlebitis followed the pulmonary and cardiac lesions. Furthermore, the fact that thromboses in the heart, the brain, and the abdominal organs are described renders the hypothesis of pulmonary thromboses equally acceptable. In Case 5 signs and symptoms of a pulmonary thrombosis in the right lung were preceded for a week by slight pains, possibly representing the period of antecedent phlebitis.

In Cases 1, 3, and 4 there were very strong grounds for associating the thrombo-phlebitis with streptococcic focal infection. In no case were there symptoms or signs of a septicæmia, and in Cases 3 and 5 blood cultures were negative. In Moorhead's series also blood cultures were uniformly negative. If, therefore, focal infection is to be regarded as of ætiological importance, the phlebitis must be due to a bacteriæmia rather than a true septicæmia. There was no history or family history of gout in my series and in no case were there racial or other considerations in favour of thrombo-angiitis obliterans, a disease which may, according to Buerger,[9] be heralded by a migrating superficial phlebitis.

Summary.

These cases are reported as supplementary to Moorhead's account, and because the clinical picture does not at present appear to be as familiar as it might be. On the basis of the descriptions quoted, thrombo-phlebitis migrans may be defined as a disease in which phlebitis appearing usually in small lengths of superficial peripheral veins is sometimes followed by symptoms of inflammation with small vascular obstructions in the lungs, the abdomen, and more rarely in the heart and the brain. Visceral thromboses may also precede or occur without superficial lesions. The disease tends to run a long and tedious and often interrupted course. Fever and leucocytosis commonly accompany each fresh development. Although it may give rise to serious illness and much anxiety, the prognosis is favourable, presumably because the thromboses are venous, because they do not as a rule spread to larger trunks, and because there is no associated septicæmia. The pulmonary thromboses may be heralded by agonising bouts of spasmodic pain or by ordinary pleuritic symptoms which precede hæmoptysis, when it occurs, by hours or days. A faintly turbid and blood-stained pleuritic effusion sometimes follows. The abdominal thromboses are characterised by pain and distension and occasionally (vide Moorhead and Abrahamson) by melæna. The symptoms of the cardiac and cerebral thromboses do not differ from similar lesions of other causation, but, as small veins rather than arteries are probably involved, prognosis again need not necessarily be regarded as unfavourable. Treatment is expectant and symptomatic. Liberal fluids and potassium citrate may reasonably be prescribed. Obvious focal infections should receive attention at the proper time. Perhaps the most important single conclusion to be drawn from a study of these cases is that thrombo-phlebitis of this type is to be remembered as an occasional cause of cerebral, cardiac, pulmonary, and abdominal accidents which might otherwise prove difficult to explain.

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TREATMENT OF EMPYEMA IN CHILDREN.

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Empyema, a term which in this paper is used in its ordinary loose sense of an abscess of the pleural cavity secondary to an acute infection of the lung, is notoriously a difficult and unsatisfactory condition to treat, and the younger the patient the worse are the results. This state of affairs has naturally caused the evolution of a large number of widely differing methods of treatment (an excellent summary of which is given by Chandler [1]), but none of them has been generally accepted. Though I need hardly disclaim any finality for the variations described in this paper, a description of them and the reasoning that led to their use may be of general interest. The method has at any rate stood some share of three of the main tests, having been used for several years, by several different hands, and in a wide variety of cases. About the results obtained, though they seem to me to be encouraging, I do not like at this stage to say more. To analyse them properly in a disease so protean, every case should be considered in relation to the following factors:—

1. The actual mechanical condition of the abscess and the surrounding structures. In no other surgical condition are these so complex, variable, and important; and it is almost entirely from this angle that the problem is attacked in this paper.

2. The time-relation of the formation of the abscess to the original pneumonia. This is perhaps the most important single factor in prognosis, and for a discussion of the immensely increased risks in the "syn-pneumonic" cases I would refer to writings by Cameron [2] and Graham.[3]

3. The age of the patient. This in children is extremely important, mainly owing to the greater liability of infants to the syn-pneumonic form.[2]

4. The type of infecting organism. The importance of this, though obvious, is very difficult to assess. There is no doubt that streptococcal infections incline to the syn-pneumonic form more than pneumococcal ones and are, to that extent at least, more deadly.

5. Complications, such as pericarditis and metastatic abscesses. The younger and weaker the patient, the more common these are.

6. Intercurrent diseases, such as measles and ear infection. In London children these have a very marked influence on the gross death-rate.

7. The length of time the empyema has been present before the beginning of treatment.

8. The results at least a year after cessation of treatment, checked by X rays. Every surgeon has had to deal with recurrences which he knows were classed by the original operator as successes.

The difficulties of discussing in this way the cases treated are so obvious that I would depend for justification of my method on the statement of the reasoning responsible for it, as being possibly more convincing, as it is certainly more assailable, than the usual table of results. As I have said, I intend to confine myself almost entirely to the mechanical point of view, but even here the teaching in textbooks of physiology, pathology, and surgery is so vague and so contradictory that I must first shortly state my own opinions on two fundamental points. These are the actual means by which the body cures the condition, and the effects of the measures taken by the surgeon to aid it in doing so.

Methods of Cure.

The condition with which we have to deal is an accumulation of pus in what should be merely a potential space between the pleural layers, causing evil results partly from absorption of toxins and partly from compression of the thoracic contents. The body has three ways of dealing with such a collection: the first is by absorbing it, as in many peritoneal effusions; the second is by organising it, as in a blood-clot in a wound; and the third is by evacuating it with a subsequent growing together of the walls that have contained it, as in a quinsy. In an empyema the first of these methods is of little use; the pleura cannot compare with the peritoneum in its capacity to deal with purulent effusions. The second is in this disease one of the body's many misdirected surgical efforts, and is much more of a hindrance to healing than a help. The pus secreted by the pleura is usually a plastic fibrinous fluid, of such low virulence that it can be organised into fibrous tissue where it coagulates on the walls of the containing cavity,[4] which finally may become lined with a stiff layer that interferes both with the expansion of the lung underneath it and with the absorption of the remaining fluid. The third method is in this, as in all abscesses, the best.

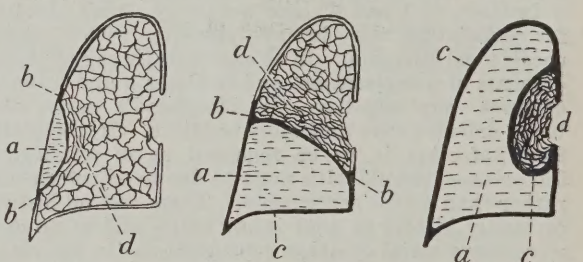
In some regions of the body, where the abscess walls are merely displaced soft tissue, obliteration of the cavity is automatic upon its evacuation; in others, where the walls are rigid, it is a matter of the utmost difficulty. (What would not the surgeon give for an easy method of blotting out some of the cavities that lie scattered among the skull bones?) In empyema the problem is midway between the self-obliterating quinsy and the persisting antrum: the part of the abscess wall reinforced by the ribs is rigid, while that formed by the lung varies widely both in its stiffness and in its readiness to join the other.

It is important to realise the extreme variations in the actual structure of the abscess and its surroundings. Fig. 1 shows the most favourable type of case, in which a small collection of pus (*a*) is walled off by adhesions (*b*) from the normal pleural cavity. The pleural lining of the abscess is not thickened and the lung is uninjured, so that the compressed portion (*d*) is ready to expand and obliterate the cavity as soon as the pus is let out. Fig. 3, on the other hand, shows a very different condition. The entire pleural space is occupied by the pus (*a*), and both pleural layers (*c*) are thickened and stiffened by a layer of organised fibrin deposited upon them. The lung (*d*) is compressed into a small solid mass, the tissues of which, apart from being bound down by the contracted pleura, have had their power of expansion spoilt by inflammation and fibrosis. Fig. 2 is an intermediate condition.

Any method of treatment should always be considered in relation to the two extremes. A series of cases like Fig. 1 will give good results whatever is done to them, while it is obvious that there is no speedy and facile cure for the condition shown in Fig. 3.

The most important factor in the cure of an empyema is that reaction of the body by which two granulating surfaces—such as the pleural layers become where they form the abscess walls—develop at any point of contact a powerful and persistent tendency to grow together over their whole extent. This is because at the meeting point the granulations fuse, and the fused mass, in changing into its final form of

FIG. 1. FIG. 2. FIG. 3.



FIGS. 1–3.—Diagrams illustrating variation in the structure of empyema abscesses. *a* = pus; *b* = adhesions; *c* = pleura; *d* = lung.

scar tissue, contracts, so pulling together the granulations immediately in front to repeat the process (Fig. 4). In the unopened empyema this force of adhesion is counteracted by the incompressible fluid contents; but when these are let out it works to pull the lung out to the chest wall. It is even strong enough, if the lung refuses to expand, to reverse the process, and to cause severe deformity by pulling the chest wall in on to the visceral pleura. From the point of view of the healing of the abscess cavity alone, the expansion of the lung is only of importance in so far as it makes it easy or difficult for this adhesion to occur.

I do not think an empyema is ever cured except by the complete growing together of the two layers of the pleura, with or without a covering of organised exudate, over the whole abscess cavity. The pleural space may possibly re-form in parts owing to the proliferation of surviving endothelium, but I have been unable to find any case in which this regeneration approached the completeness that is often found

after a plastic peritonitis. The typical result is the final and complete obliteration of the cavity over the area involved. If, therefore, this progressive encircling adhesion is taken to be the method of cure, time must be allowed for it to occur; if free drainage ceases while there is still a cavity left, the only hope of cure lies in the very limited absorptive power of the pleura.

Effects of Surgical Measures.

The part of the complicated and debatable mechanics of the chest that most concerns the treatment of empyema is the effect produced by opening the pleural space. In the normal chest the main results are two. The first is a partial collapse of the lung, due to the loss of the negative pressure on its outer surface; but

FIG. 4.

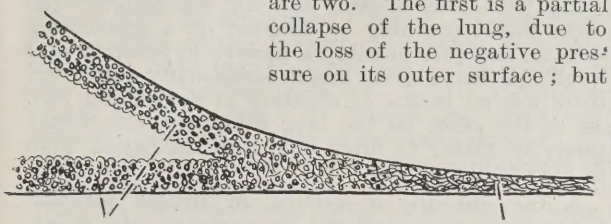


Diagram to show fusing of two layers of granulation tissue.

this collapse is very much less complete and dangerous than used to be supposed. The old teaching was that on admitting air freely to the pleura the lung shrank into a useless lump, and that consequently the opening of both cavities together meant instant death. It is now well known that, though the lung collapses to some extent, yet respiration can be carried on with both pleural cavities communicating with the outside air.

The second effect, the rush of air on inspiration into the pleural cavity through the wound, instead of into the lungs through the trachea, is far more important and more dangerous. When the chest expands, air tends to stream into it, and if there are two routes available the share of each will be in proportion to its cross-section. If the opening is so large that, in the competition to fill the chest between the wound and the trachea, the latter does not get enough air, distress and death ensue.[3] This relation between the size of the opening and the damage it does was well illustrated in the war, when men with minute bullet punctures of the chest were often quite comfortable, while those with large shell wounds suffered an agony of dyspnœa.

In an empyema, however, instead of a potential space lined by a thin membrane and under a negative pressure, there is a collection of fluid enclosed in walls of varying stiffness and under varying degrees of positive pressure from the thoracic contents which it has displaced. Any normal pleural cavity that may remain is shut off from the abscess by the adhesion of visceral and parietal layers at its borders, and the lung itself is compressed in proportion to the size of the accumulation. The result is that when an empyema is opened, instead of the contraction of the lung that follows the opening of the normal pleura, there is an expansion, to a degree governed by the state of the lung tissue and the overlying pleura.[5]

The effect of the entrance of air during inspiration will obviously vary again with the size of the cavity and the stiffness of its walls. With a small thick-walled abscess, however freely it is opened, there will be very little interference with the supply of air to the lungs, but when the inner wall of the abscess is a large and flexible area of pleura the effect on respiration may be almost as great as if the normal chest had been opened. It is to be remembered that an empyema found during the course of a pneumonia will be of this type, as the walls will not have had time to stiffen, and consequently if it is opened freely the maximum of respiratory disturbance will be produced in just the patient who has the minimum resistance to it.

A third result of opening an empyema is the reaction caused by removing an incompressible mass of fluid from amid the compressible and sensitive thoracic viscera. This, of course, varies with many factors, the most important being the size of the collection and the rate of evacuation. Also, as methods of operating that allow a rapid outflow of pus usually permit a free entrance of air as well, it is not often easy to assess the exact share of damage done by each of these factors. But there is no doubt that in some cases the sudden change of pressure in the chest may cause serious shock, especially where the heart has been much displaced.

The conclusions are, that though there is no danger from collapse of the lung on opening an empyema, both rapid release of pus and free entrance of air should be avoided.

Treatment.

This falls into the usual two divisions: the treatment of the patient and the treatment of the disease. If the empyema appears as a syn-pneumonic one, that is to say that the abscess forms while pneumonia is still causing critical illness, temporising treatment alone should be considered. As has been pointed out, any free opening of the chest, as by rib resection, will lower still more an already lowered vital capacity, with almost invariably fatal results.[2 3 7] The pus should be prevented from causing pressure on the heart and lungs by slow aspiration, as complete as possible and as frequent as necessary, until the pneumonia has resolved. The accumulation may re-form rapidly and need tapping every second day; one tapping may tide over the dangerous stage, or in a very small percentage of cases a cure may result from aspiration alone. In this, as in all other points, each case is a law unto itself, but in the great majority the abscess will continue refilling indefinitely until continuous drainage is established, so that this should not be put off longer than is absolutely necessary. As it is necessary to temporise in some of the cases diagnosed early, so also is it necessary in some of those diagnosed late. A child who has been carrying a pint of pus in the chest for a month or two is often extremely ill, and stands interference extremely badly. Here a slow aspiration of the fluid will relieve the heart and greatly improve conditions at the operation a day or two later. A proper diet, fresh air, and good nursing are as important in this as in any other disease, and I am convinced that in the cases where attack and defence are so evenly matched that it is hard to foretell the outcome, blood transfusion is often of the utmost value.

In the actual drainage of the pus numberless methods are used, varying from extreme simplicity to extreme complication. As the operation is generally performed in this country to-day, a segment of rib is removed under a general anæsthetic, the pus is allowed to gush out, and a large tube retained by a safety-pin is put in. This tube is usually found outside the chest each time the wound is dressed, and there are no very clear indications for finally leaving

it out beyond a difficulty in getting it in. Various types of tubes with flanges to prevent them pulling out are used, but these are difficult to insert in a conscious patient, and in many the flange is so large that it must interfere with healing. The bad points of this method are the comparative severity of the operation, the lack of control of egress of pus and ingress of air, and the liability to trouble caused by infection of the cut ends of the ribs. This may vary from slow healing or breaking down of the wound to actual reinfection of the pleural cavity and may to some extent be avoided by plugging the exposed cancellous bone with Horsley's wax at the time of operation. Its good points are the free drainage and the simplicity. An advantage often claimed for it is that it allows the inspection and "freeing" of the lung, but—with children especially—the extreme shock that can be produced by a large opening in the chest is not improved by raking about inside. Any clots that can be removed in this way can be better removed by irrigation, the adhesions at the edge of the abscess should be left to circumscribe it, and that extremely rare condition, a true loculated empyema, is not likely to be discovered at operation unless previously diagnosed. It is hardly necessary to point out that a loculus can only be definitely excluded by digital exploration when the entire pleura has been examined. (By a loculated empyema I mean one in which there are two or more collections of pus with no connexion between them; in what is usually called by this name there are merely fibrinous septa partially dividing the cavity.)

I have never been able to understand exactly what is meant by the process so often recommended of "breaking the adhesions that are binding down the lung." Certainly it would be a good thing if by any safe method we could immediately remove all thickening from the pleura, but I do not think anyone would advocate a kind of primary decortication in children.

Then there are the methods of making a large opening in the chest, vigorously cleaning out the cavity, and sewing the wound up, usually with aspiration through a corner of it afterwards. This is so obviously inapplicable to children that it need not be discussed here, but it seems to me to exaggerate both the shock of the open method and the uncertainty of the closed.

Disadvantages of Closed Drainage.

At the other extreme from the open treatment there are many types of "closed drainage," the principle of which is to suck out all the pus through a small tube introduced by trocar, and to suck up the lung to its full size without ever letting in the outside air to collapse it.[8] It is an attractive idea, but a critical examination of its theory and practice discloses the following disadvantages and difficulties:—

1. Incomplete emptying of the cavity, which is important owing to the absorption of toxins from the residual pus and to the tendency of this pus to organise. It is obvious that unless the cavity can be obliterated completely it can only be emptied of fluid when gas is injected to replace it; but obliteration is impossible in most cases and the injection of gas is very seldom suggested. Even if the lung would rise to the chest wall all over the cavity on complete withdrawal of the pus, this withdrawal is only possible when the opening of the tube coincides with the lowest part of the cavity; the difficulties of ensuring this are obvious. (A series of experiments in emptying rigid glass jars and collapsible rubber hot-water bottles by means of airtight suction will be found very illuminating on these points.)

2. The difficulty of ascertaining the occurrence and amount of the negative pressure in the cavity, and our ignorance of its effects. Most systems have no manometer to show whether an actual vacuum is produced or what is its degree. Even if there is a manometer and it shows a negative pressure there is no way in which one can be sure that there is this pressure in the cavity, and that the end of the tube is not blocked by clot or hanging like a leech to the wall.

As to the effect of a localised low pressure on the tissues very little is known. If suction sufficient to neutralise the very moderate force in the capillaries is kept on a piece of skin, that skin will slough. The effect would probably be different on a granulating surface, and just possibly a passive hyperæmia that would quicken healing might occasionally occur, but there are no means of ensuring or controlling this. As to the effect on the lung substance, this would surely be rather to bring fluid into the tissues than to expand the alveoli.

3. The difficulty of getting an airtight junction between the chest wall and the drainage-tube, which is due to that bodily reaction by which the tissues shrink from the pressure of any foreign substance. The tube may be a close fit when first inserted, but the next day it is loose, and by the end of the week it is sliding easily through feeble granulations. Some systems ignore this difficulty entirely, and others try to overcome it by various arrangements of adhesive plaster between the tube and the skin. These are surprisingly difficult to keep adjusted, even in a biddable adult, and the discharges from the wound tend to burrow an excoriated passage beneath them, this outlet becoming increasingly easy as the epithelium to which the plaster originally stuck is cast off by the natural processes of the skin.

4. The difficulty of cleaning the tube when it is blocked, an annoyance that is by no means rare with thick pus and a narrow-bore tube.

5. The impossibility of free irrigation of the cavity. Running fluid in and sucking it out again is a poor substitute for washing it through.

6. The difficulty of keeping the tube long enough to empty the cavity but not so long that it impedes healing.

7. Finally, there is the familiar surgical problem of how to ensure that a small drainage-way will remain open as long as there is still matter behind that should drain through it. The small puncture will close almost in a night when the tube is once withdrawn, and if the cavity on the other side is too large, or the infection too virulent, the result is a recurrence of the original abscess.

The good points of the closed method are, however, undoubted, and I think it has saved many lives which would have been lost with cruder treatment, even though secondary operations have been ultimately needed. The trivial operation under a local anæsthetic, the control of the rate at which the pus is evacuated, and the avoidance of any large inrush of air, are all factors that may make the difference between life and death.

The method now to be described is an attempt to retain these advantages and yet to give free drainage and allow irrigation with an easy outflow. It does not need the constant attention of a mechanically minded surgeon, and there are definite indications for the cessation of drainage.

Technique Recommended.

The anæsthetic should, in every case where it is possible, be a local one; and I think that with a very fine needle for the skin, plenty of patience, and plenty of 0·5 per cent. novocain, any child can be handled in this way. At any rate, for at least two years all cases coming into the Hospital for Sick Children, Great Ormond-street, were so done. In the severer cases there is no doubt that a general anæsthetic does a great deal of harm; the child is already in difficulties with its breathing, and when it feels any interference with this it naturally begins to struggle desperately. This is quite apart from the consideration that chloroform is notoriously dangerous in toxic children, that ether is a lung irritant, and nitrous oxide an asphyxiant. I may say here that when I speak of the dangers of operation I do not necessarily mean that the child dies on the operating table, but rather that it is easy to give children a "shock to the system," by trauma and anæsthetic poisoning, from which they never really recover.

The point of incision varies with the situation of the pus, but is most often over the sixth or seventh interspace in the posterior axillary line, close to what is believed to be the centre of the abscess, near the mark of a needle that has withdrawn pus. I think it is a mistake to aim for the line of reflection of the pleura on to the diaphragm, as is often advised. Drainage from this point is hindered by the dome of the diaphragm, which is also in distinct danger of perforation at the operation if the pleural layers are adherent; its only advantage, which is drainage from the lowest part of the cavity, can be better attained otherwise. In babies under two this operation, like most others, is made much easier if they are bandaged to the form of "crucifix" I use,[6] and in many cases access is most convenient if the child lies face downwards.

A cut about 2 inches long is made in the line of the ribs, the intercostal muscles are detached from the lower rib of the space chosen, and the pleura is

FIG. 5.

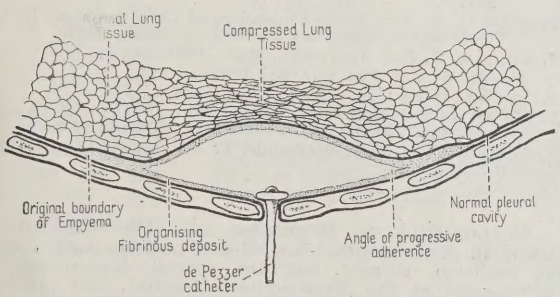
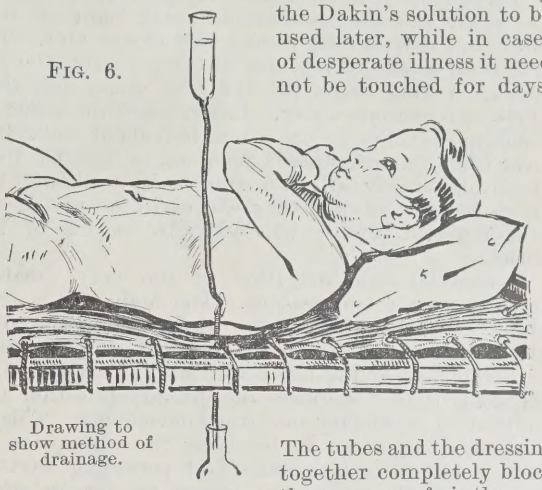


Diagram illustrating a drainage of an empyema cavity through a de Pezzer catheter.

exposed. Into this, with allowance for its variable thickness, a pair of blunt-pointed dissecting scissors is thrust, and gently opened to make a wound about an inch long. If no pus is found, a piece of rib is resected and a finger put in to explore, but this is very rarely necessary unless the abscess is interlobar or on the diaphragm. When pus appears, its gush should be instantly stopped with a swab and two de Pezzer self-retaining catheters inserted by means of their stylet. The bulbous ends of these instruments hold them in place just inside the opening and prevent the exit of fluid in any way except down their tubes, which for the time being are kept closed by clips. The size of catheter should be chosen to fit each case, from No. 18 for a baby to No. 28 for a child of 10.

The wound is not sutured, but a dressing of gauze soaked in liquid paraffin is packed tightly into it and held by a many-tailed bandage. This dressing is painless to remove, and the paraffin protects the skin from irritation by the Dakin's solution to be used later, while in cases of desperate illness it need not be touched for days.

FIG. 6.



Drawing to show method of drainage.

The tubes and the dressing together completely block the passage of air through the wound, and so an open pneumothorax with all its hurtful effects is avoided.

The child is then put back to bed in the only piece of special apparatus used, a sheet of canvas, laced by eyelets round its border to a frame which is attached to the bedposts. This frame can be either a stock fitting for a hospital cot or can be rigged according to circumstances in a private house; an ambulance stretcher makes quite a satisfactory one. To one side of the middle line, about 2 feet from the head end, there is a hole 4 inches in diameter, and the child is arranged (and, if necessary, kept in position by harness) so that the wound is directly over it. The chest sags down into the hole, and the lower de Pezzer catheter leads directly downwards through it into a bottle of antiseptic. By this means one of the simplest and most important of surgical rules is observed—the rule of draining from the lowest part of a cavity (Figs. 5 and 6).

The child is then allowed to rest for an hour or two to recover from the stress of body and mind to which it has been subjected, and only when it has settled down are the clips released to allow the escape of the pus. When this has ceased to run a sterilised glass funnel is attached to the upper tube, and from a height of 2 feet fresh Dakin's solution, at a temperature of 105° F., is run in, washing out the rest of the pus by the lower tube. As the solution is warm there should be no shock from change of temperature in the chest, and, as there is a free exit, a very moderate head of fluid, and the cavity is on the underside of the body, so that there can be no weight pressing on the thoracic organs, I do not think there is any danger from pressure effects. I have never seen the irrigation cause the slightest change in the child's condition, nor have I heard of any harm resulting in hospitals where it is used as a routine on patients of all ages.

I know there is a tradition that washing out the pleural cavity has caused sudden death, and very possibly the use of cold solution might produce dangerous shock. But from what I can find out about these cases, apart from those that occurred during the thorough toilet of the cavity at the time

of the operation which I have already deprecated, the probable reason for the disaster was the use of excessive pressure with lack of free exit for the fluid. When one finds the older text-books advising against the use of a syringe one gets a hint of the way in which some of these deaths may have occurred.

The quantity of fluid used varies with the size of the child and the amount necessary before it runs clear, but it is usually from a half to one pint. The irrigation should be repeated at three-hourly intervals during waking hours for the first week, and then three or four times a day. Later, when the patient's condition permits, he can be moved about and rolled over while the irrigation is going on, so that the fluid penetrates freely all over the cavity. Should the tubes become blocked they can easily be pulled out and replaced almost painlessly by means of the stylet.

I consider this irrigation of the very greatest importance for two reasons. The main one is that Dakin's solution will dissolve fibrinous deposits even after their organisation has begun,[3] so preventing the stiffening of the inner wall of the cavity. The second is that it sterilises the primary infection and prevents a secondary one from developing. This is obviously important in lessening the absorption of toxins, but although almost all persisting cavities are secondarily infected, I regard this as an effect rather than a cause of the persistence. To dress a wound leading into an admirable culture medium for weeks without allowing the entrance of infection demands a perfection of asepsis rarely attained; but if the lung is able to expand and obliterate the cavity I cannot imagine any ordinary infection preventing healing.

After-care.

When the temperature has been normal for a few days and the child's age and condition allow, he is encouraged to sit up and do blowing exercises, one of the best being the driving of coloured water from one Woulfe's bottle into another. As the act of blowing raises the air pressure inside the lungs, it must be of value in stretching the contracted alveoli and helping the circulation. A second and even more valuable form of exercise is that given by getting the child on his feet as soon as possible, an advance that has effects of the utmost value on the lungs, circulation, and morale. It is, of course, impossible to lay down any definite time for this, but in the less serious cases it is often possible at the beginning of the second week. During walking and sitting up both tubes are held in the many-tailed bandage, but when the child lies down the original position is kept with drainage directly downwards into fluid and the upper tube closed by a clip.

The final stage is in many ways the most difficult of all. The tubes should not be kept in longer than necessary, yet if the opening is allowed to close before the cavity inside is obliterated trouble is only too likely to occur. Obviously the thing to watch is the gradual diminution of the cavity, and the first sign of this is usually the decrease of the sucking-in of air on inspiration through the wound when this is temporarily left open during dressing. Of course, this sign is not really definite; if the walls are stiff enough there will be no sucking, whatever the size of the cavity, but its gradual diminution usually betokens the progressive adherence of the two pleural layers. The irrigation gives, however, a much better way of measuring progress. One tube is removed, and after leaving the child with the wound downwards so that all the contents run out, a test is made with the wound upwards to see how much solution can be poured down the tube into it before it overflows. Of course, the critical amount varies with the size of the child, but if size 28 catheters are being used one should be left out permanently when the cavity holds less than 10 c.cm., and the wash-out continued through the other alone. By this time the opening in the chest wall will have enlarged so that there is an easy outflow for the irrigation fluid. When less than 5 c.cm. can be poured in without overflowing the remaining tube is removed and the wash-out given thrice daily through a soft rubber catheter. When this can no longer be pushed in between the ribs the irrigation is stopped and the wound dressed with paraffin and allowed to heal.

It will be seen that there is no attempt to make time the indication for any step in the treatment, or the saving of it the main recommendation of this technique. I think it is very satisfactory to get an ordinary empyema healed in three weeks, and it is quite needless to attempt to shorten this period, though I am well aware that it is possible to get much more rapid closure by other methods. In my opinion, the quick successes are too dearly bought at the price of secondary operations on the failures; it matters very little to the patient and the surgeon whether a wound is dry in ten days or in thirty, but it matters vitally if it breaks down after healing. The typical persistent sinus is not the result of an empyema that has discharged continually, but of one in which the wound has healed and then broken down again.

It is beyond the scope of this paper to deal with the treatment of persisting sinuses, but the same technique of washing out and discontinuing drainage will often be found extremely useful after they have been opened up.

My thanks are due to the honorary staff of the Hospital for Sick Children for their help and advice in the series of cases on which this paper is based, and to Dr. C. A. Keogh for his drawing in Fig. 6.

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FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—An all-day post-graduate course in medicine, surgery, and the special departments is in progress at the Metropolitan Hospital, and applications for the second week are invited. The following special courses begin in October: a course in diseases of the ear, nose, and throat, at the Central London Throat, Nose and Ear Hospital, from Oct. 6th to 25th, consisting of a clinical course and operative surgery and pathology classes (strictly limited); a course in gynæcology at the Chelsea Hospital for Women, from Oct. 13th to 24th; and a course of 17 lectures suitable for (but not restricted to) candidates for the M.R.C.P., on Tuesdays and Fridays, from Oct. 7th, at 8.30 P.M., at the Medical Society's lecture room. Dr. L. J. Witts will give the first lecture, on Recent Work on the Liver. At the same place a course of demonstrations in clinical surgery and pathology for the final F.R.C.S. will be given once a week for six weeks, at 8.30 P.M., beginning on Oct. 8th. Four demonstrators will attend each evening and will provide two cases each. Contrary to the statement made on the syllabus itself fees must be paid in advance and tickets cannot be issued at the lecture hall. Particulars of all courses may be obtained from the Fellowship at 1, Wimpole-street, London, W. 1.

CLINICAL AND LABORATORY NOTES

ACUTE TORSION OF THE SPERMATIC CORD.

BY HAROLD UPCOTT, F.R.C.S. ENG.,
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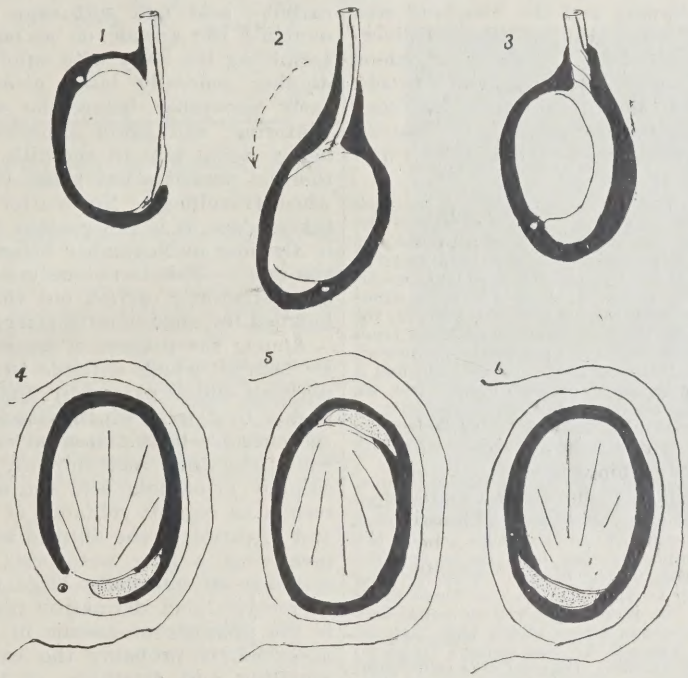
AXIAL rotation of a fully descended testis within the tunica vaginalis is prevented by the normal attachment of the epididymis to the posterior part of the tunica. This attachment, or mesorchium, extends along the epididymis, leaving only the globus major and minor free; there must be some deficiency in this anchoring band before rotation becomes possible (Fig. 1).

IMPERFECT DESCENT OF THE TESTIS.

Campbell[1] found that in nearly half of 145 recorded cases of torsion the testis was imperfectly descended; it is evident, therefore, that there is a high incidence of axial rotation among those with imperfectly descended testes. This suggests that such testes have only a short attachment to their serous envelopes. Such a condition of insecurity may also result from inversion of the testes, where the organ lies upside down, epididymis in front, suspended in the tunica by the cord entering the globus minor (Fig. 2). The following case is an example.



The upper drawings show the right testis from the medial aspect. (1) Normal testis. (2) Inverted testis. Epididymis lying in front. (3) Clockwise rotation of inverted testis through 180 degrees (or 540 degrees) bringing epididymis to the back and digital fossa to the medial side. The lower drawings represent transverse sections of the right half of scrotum, Figs. 4, 5, and 6 corresponding to Figs. 1, 2, and 3, respectively.

The right testis of a youth, aged 19, had never reached the bottom of the scrotum but had always lain in the upper part. At intervals of a few months since the age of 15 it had become swollen and painful, these recurrent attacks lasting only a day or two.

Three days before I saw him he was seized with sudden very severe pain in the testis, far more acute than any previous attack. He vomited. The testis swelled up and remained swollen and tender. On examination the upper part of the right scrotum was occupied by a tense globular mass two and a half inches in diameter and acutely tender. The skin over it was dark red, and the cord swollen and tender.

Incision of the tunica exposed a swollen, purplish-black testis lying with the epididymis behind and the digital fossa on its medial aspect. The testis was free in the tunica except for its attachment to the cord, which was twisted from without inwards one and a half complete turns (Fig. 3). The cord was divided above the tunica and the testis removed with its coverings.

After removal the combined testis and epididymis resembles a deep purple plum. On its medial aspect (as it lies with the testis in front) is a deep sulcus representing the digital fossa. Along its lateral aspect a shallower groove marks the division between testis and epididymis. The latter is relatively more swollen than the former. It is nowhere attached to the tunica vaginalis except above, where it hangs suspended by a short pedicle, a quarter of an inch in diameter, formed by the structures of the cord. This pedicle is tightly twisted through 540 degrees so that the testis is drawn close up to the top of the sac. By rotating the testis one and a half complete turns in an anticlockwise direction the twist is undone, and the testis lies with the epididymis in front and the digital fossa on its lateral aspect. Attached by a narrow pedicle to its lower pole is a flattened hydatid of Morgagni, compressed by the pressure of the swollen testis against the tunica. The vas springs directly from that pole of the epididymis which lies uppermost, and is absent from a transverse section through the middle of the testis and epididymis. The gross appearance suggests an infarct of the tissues.

In the case recorded above the diagnosis was clear. Sometimes the condition is closely mimicked by a strangulated hernia.

ECTOPIA TESTIS; STRANGULATED INTERSTITIAL HERNIA.

A youth, aged 19, had always had a lump in the right groin. On the morning of his admission to the nursing home he was seized with a severe pain in the groin and in the centre of the abdomen. Sickness and pain had continued throughout the day and the bowels had not acted. He was found to have a tense tender swelling above the middle of the right Poupart's ligament. The right testis was absent from the scrotum. Though torsion of an undescended testis was considered as a diagnosis, the severity of the symptoms made a strangulated hernia more probable.

Operation half an hour later revealed a hernial sac lying between the external and internal oblique aponeuroses and containing clear brownish fluid, and a coil of small gut nipped by the neck of the sac. The testis lay in the upper part of the sac nearest the navel. The bowel, being viable, was returned and the undeveloped testis removed with the sac.

Sometimes neither of these diagnoses will be right.

STRANGULATED UNDESCENDED TESTIS.

A boy, aged five months, had a swelling in the right groin for two days. On the day before examination he vomited, and the next day the bowels did not act. Examination showed that the right testis was absent from the scrotum. Just above the middle of the right groin was a fixed, tender swelling the size of a filbert.

Incision exposed a deeply congested testis protruding from the deep inguinal ring. The organ was tightly nipped by the ring, the globus major being within the abdomen. The ring was enlarged and the testis drawn out; the

[1] Campbell, M. F.: Surg., Gyn., and Obst., 1927, xliv., 311.

cord was œdematous but not twisted. The testis was removed.

Symptoms suggestive of an acute torsion of the spermatic cord may therefore be associated with three different conditions of the testes: inversion, ectopia, or failure to descend. The possibility of strangulated hernia should not be overlooked.

ELIMINATION OF ARSENIC AFTER SHEEP-DIPPING.

BY SIR THOMAS OLIVER, M.D. GLASG., F.R.C.P. LOND.,
EMERITUS PROFESSOR OF MEDICINE IN THE UNIVERSITY OF DURHAM.

IN THE LANCET of March 1st last an interesting paper entitled Sheep-dipping and the Shepherd was published by Prof. I. Walker Hall, of Bristol University, and Mr. Rowland H. Ellis. With the opinions expressed I am in full accord, and should like to add my own experience. A month ago there was sent to me from the Northumberland moors a well set-up healthy looking shepherd, aged 35, married, who gave the following history.

After a day's sheep-dipping in August, 1925, a red rash appeared on his skin from the ankles to just above the knees; the skin was hot and painful. The herd did not lie up on account of it; he simply dressed the affected limbs with olive oil. By the third day the rash had, practically speaking, disappeared and was followed by desquamation. For several days he was the subject of diarrhœa, for which he could not account. The stools were free from blood. There was no vomiting. He gradually recovered, but 20 of the sheep he had dipped died; one, which had a sore on its back, during the process of dipping, and six on the following day. By the third day the remainder of the 20 sheep had died. So far as the herd remembers the sheep had no diarrhœa; they frothed at the mouth and lay on the ground unable to rise.

In August, 1929, this same shepherd, after having dipped over 200 sheep in three days, awoke one morning feeling extremely weak, with his arms and legs so stiffened that he could hardly move them, but as the hours passed the condition of the limbs improved that later on in the day he assisted in leading sheep to the dipper. That evening he drove a flock of sheep to the farm two or three miles away, but at the end of the journey he was so completely exhausted and had such severe pains in his legs that, as he could hardly support himself, he was obliged to go to bed. His speech became affected, that he was with difficulty understood. On the following day there was frequent vomiting attended by acute abdominal pain; the vomit contained blood, but there was no diarrhœa. Next day, when seen by a doctor, his case was diagnosed as acute inflammation of the stomach, and treated accordingly. For a week afterwards patient was the subject of repeated vomiting. At this stage jaundice developed and persisted for a few weeks, attended by considerable epigastric pain. There was marked paresis but no paralysis of the limbs. There was distinct impairment of his mental faculties, and nearly all the hair of his head was shed.

DETECTION OF ARSENIC.

It was not until January of the present year, nearly five months after the dipping referred to, that he was able to return to his general duties as a shepherd, but, as he was forbidden to dip, his wages were reduced. He looks healthy and is physically fit for ordinary work. Heart and lungs are healthy, and beyond the abdomen being more tympanitic than usual, the internal organs appear to be normal. The urine is free from albumin and sugar; knee-jerks are completely absent; blood pressure is 142 systolic and 102 diastolic. I sent a sample of the urine and hair to a chemical laboratory, and the note received states that, in both of these, arsenic is present. Under this circumstance it would be unwise to allow the shepherd to undertake dipping at present. The interesting point is that according to text-books arsenic is said to be a non-accumulative poison, but in the case I have detailed, although it is more than a year since exposure to the poison arsenic is still being eliminated by the kidneys and the hair.

THE PRACTICE OF DIPPING.

There is a general opinion among sheep farmers that carbolic acid and arsenic are the most efficient agents in sheep-dipping compounds. They effectively clear the fleece of parasites, but they are poisons. Sheep-dipping takes place two or three times during the year. The times vary in different parts of the country. Here, in Northumberland, we are a little later than in the south. It is highly desirable that the lambs should be dipped during the summer months, two weeks after the ewes have been clipped. They thrive better after a dipping. If the "fly" is troublesome the ewes are put through a bath in which carbolic acid and soft soap have been dissolved, omitting the arsenic on account of the lambs, and sprinkling the body with sulphur instead. The next dipping generally takes place in late October or early November before the ewes are sent away to wintering, and again sometimes after their return before being sent to the hills. This not only clears them of parasites but keeps them free from disease when travelling. No matter what dippings have taken place, it is the custom to dip the older sheep in October or November before the tups are put to the ewes. This is not only a hygienic measure, but if satisfactorily carried out the animals need not be handled for some months afterwards.

Among sheep there often develops what is known as "scab," which is liable to assume epidemic proportions and is extremely difficult to get rid of. It is due to a mite which attacks the woolly parts of the animal's body. Instead of an arsenical dip, one containing lime and sulphur, or tobacco juice and sulphur, or carbolic acid and soft soap gives the best results as regards riddance of the pest. The hands and forearms of the dippers are not protected. The men wear a long waterproof apron. If the bath contains an unusually large percentage of carbolic or cresylic acid dermatitis may be induced, but it is the presence of arsenic in the bath which, when absorbed, is probably the cause in the dipper of vomiting and diarrhœa, of the physical weakness complained of, also of colic and muscular pains, as well as of a protracted period of indifferent health.

ADENOMYXOMATOUS POLYPOID TUMOUR OF STOMACH

ASSOCIATED WITH A SIMPLE LESSER CURVATURE ULCER.

BY G. NORMAN CLARK, M.B. ABERD.,
HOUSE SURGEON, HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.

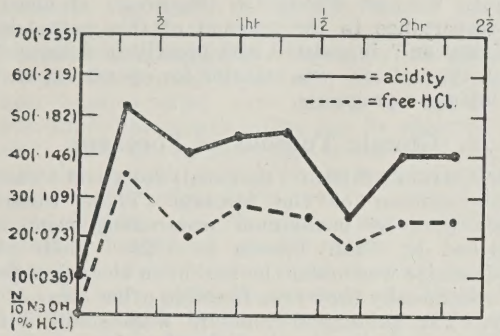
A MAN, aged 47, admitted to hospital on Feb. 4th, 1930, had suffered for six months from flatulence and attacks of severe abdominal pain, occasionally sufficient to double him up. The pain was referred to the mid-line, 3 inches below the xiphoid process, and radiated round the left side of the body to between the shoulder-blades. The pain was accompanied by vomiting of clear fluid, which gave him immediate relief. He had had no previous gastric trouble and thought he had lost weight recently. Five years ago all his teeth were extracted for pyorrhœa.

A preliminary diagnosis of carcinoma ventriculi was made.

On admission he looked ill and anæmic, yet a red blood corpuscle count was 5,340,000, with a colour-index of 0·7. Some gastric peristaltic movements from left to right were visible below the left costal margin. He was tender below the left costal margin and mid-way between the xiphoid and umbilicus; pressure below the xiphoid caused nausea.

A fractional test-meal (see Fig. 1) yielded a non-foul gastric residuum of 15 c.cm. containing a few pus cells,

FIG. 1.



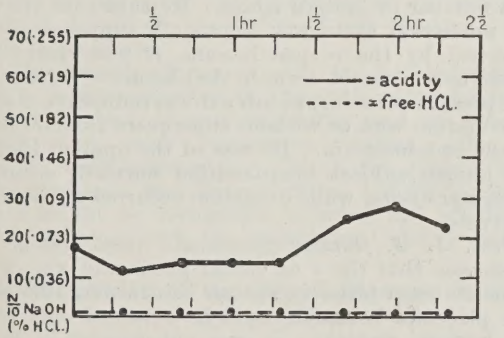
Fractional test-meal acidity curve showing high reading for the first fraction.

a moderate number of epithelial cells, mucus in large amount, and a trace of occult blood. Continued secretion was not definite and the emptying time was somewhat prolonged. Dr. C. R. Lane reported: "There is definite chronic gastritis and there may be a non-juxtapyloric gastric ulcer, though the findings are rather indefinite on this point. There is nothing to suggest malignancy."

A barium meal was given, and Dr. H. C. Gage reported: "Small three-hour residue, negative filling defect close to pylorus on greater curvature, nature and significance doubtful but just possibly growth—possible polypus. I feel it only safe to regard it as growth till proved otherwise."

On laparotomy by Mr. G. E. Waugh, under gas and oxygen and intercostal infiltration anæsthesia, on Feb. 7th, 1930,

FIG. 2.



Post-operative fractional test-meal showing absence of free acid from all the fractions and a low total acidity.

here was definite thickening of the pyloric end of the tomach with a polypoid growth 2 cm. in diameter projecting nto the pyloric antrum, and a large deep irregular ulcer wo inches from the pylorus. There were small enlarged lands in the mesentery and gastro-colic omentum. The ver looked normal. Partial gastrectomy had to be done, as one-stage operation, with restoration of the continuity f the gut by an end-to-side anastomosis with the jejunum, s in Polya's gastrectomy.

After an uneventful convalescence of three weeks a ractional test-meal showed an absence of free acid from all pecimens and a low total acidity (see Fig. 2). The bsence of free acid from all the specimens was probably due o removal of part of the stomach, but not necessarily, s it could have been due to regurgitation from the jejunum, hich was shown by the presence of bile in all the fractions except the second. The patient was put on acid hydrochlor. dil, ℥30, suitably diluted, at meal times. He thought the acid suited him best at the end of his meals and was sure it aided his digestion and markedly increased his appetite. During the following fortnight his general health was much improved and on discharge on March 13th he looked very fit. Two months later he was in very good health and free from symptoms. His weight before operation was about 8 st. During three weeks at a convalescent home he gained 11 lb., and his weight three months after operation was 9½ st.

Section of the ulcer showed much fibrosis of the muscle coat. The papilloma was an adenomyxoma with down-growth of epithelium, but was not definitely malignant. The tumour was not eroded. The glands showed chronic inflammatory endothelial hyperplasia.

Mason and Dwyer [1] were impressed by the lack of gastric symptoms in their cases of benign tumours of the stomach. Their patients suffered from weakness, anæmia, and loss of weight. Diarrhœa was very persistent, and in one case practically the sole

FIG. 3.

Radiogram of stomach taken prone. The arrow indicates the position of the tumour.

complaint. Again, Moore [2] states that single endogastric polypi, not occluding the pylorus, non-ulcerated and without coexisting cancer, do not give rise to any symptoms, and that usually the coexisting cancer or ulcus causes the symptoms. Large tumours, extensively eroded or obstructing the pylorus, give rise to distress related or unrelated to food, weakness, vomiting, hæmatemesis, and melæna. In the gastric contents hydrochloric acid is not found and there is an increase in mucus. The symptoms when pronounced are suggestive of gastric carcinoma or ulcus.

"The ball-valve syndrome," described by Eliason and Wright [3] as typical of pedunculated tumours of the stomach situated near the pylorus, appears to have been present in some degree in the case described above. The syndrome, due to temporary enveloping of the tumour by the pylorus, is characterised by repeated paroxysmal spasmodic attacks of gastric pain accompanied by temporary prostration, anorexia, anæmia, hæmatemesis or melæna, and rapid loss of weight. Later the symptoms subside and there is rapid improvement in health until another attack occurs.

Fig. 3 shows the situation of the polypus near the pylorus. Moore gives the following points in the radiological diagnosis of benign tumours; they usually produce a filling defect, which is centrally situated

and clearly circumscribed, does not distort the rugæ, interfere with peristalsis, or obstruct the pylorus unless situated in the antrum, and does not cause spasm or contraction of the stomach. Balfour [4] writes that the differential diagnosis of benign tumours of the stomach is almost entirely dependent on X ray examination. Of his cases, 58 in number, three-quarters were radiographed, and in over 90 per cent. the lesion was revealed.

Eliason and Wright,[3] in their series of benign tumours of the stomach, record a case where a pedunculated papilloma occurred with a gastric ulcer. The papilloma, situated on the anterior wall of the stomach, was 1·5 cm. long and was found in a female, aged 26, who had symptoms of a duodenal ulcer.

I have to thank Mr. Waugh, under whose care the case was, for permission to publish it, and Dr. Gage and Dr. Lane for the radiogram and pathological reports.

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BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING IN WINNIPEG.

(*Continued from p. 698.*)

SECTION OF PATHOLOGY AND BACTERIOLOGY.

AT the third session of this Section, with Prof. M. J. STEWART in the chair, Prof. WILLIAM BOYD (Winnipeg) read a paper on

The Glioma Group of Tumours.

The most important contribution of recent years, he said, was the classification suggested by Bailey and Cushing, as the result of study of a large collection of brain tumours by means of the methods devised by Cajal, Hortega, and other members of the Spanish school of neurohistologists. This study showed that 14 subgroups might be differentiated; the tumours in each of these subgroups were composed for the most part of one type of cell met with during the development of the brain. Though the type of cell was best recognised by gold and silver staining, it was the speaker's object to show that the more important types of tumour could be recognised by ordinary histological methods. In addition to hæmatoxylin and eosin, however, Mallory's phosphotungstic acid hæmatoxylin should always be used, since it stained both the neuroglia fibrils and many of the protoplasmic prolongations of the cells.

After reviewing the histology of the developing nervous system, Prof. Boyd recorded his own study of 31 gliomata obtained in the post-mortem room. These tumours fell into the following groups: astrocytoma, 16; spongioblastoma, 9; medulloblastoma, 3; ependymoma, 1; astroblastoma, 1; and unclassified, 1. It was noteworthy that all these tumours had arisen from the astroglia. Dealing with each type of tumour in turn, he said that the astrocytoma was of slow growth and was clinically benign; it occurred both in the cerebrum and the cerebellum, and was not well demarcated from the surrounding tissues; cyst formation was very common, and it was clear that many cerebellar cysts owed their origin to this type of tumour; calcification was of frequent occurrence. The spongioblastoma multiforme was large, often hæmorrhagic, and typically malignant; it was generally confined to the cerebral hemispheres, and consisted histologically of cells of multiform appearance; endothelial hyperplasia was common both in the tumour and in the surrounding tissue. The medulloblastoma occurred chiefly in children, and was commonly situated in the roof of the fourth ventricle; it tended to invade the subarachnoid space, and was highly malignant; the cells resembled those of a round cell sarcoma. The ependymoma consisted of well-differentiated cells; it was of slow growth and low malignancy. The astroblastoma was characterised by the perivascular distribution of its cells.

Prof. WILDER PENFIELD (Montreal) emphasised the importance to the surgeon of this pathological classification; it assisted him greatly in determining which type of case was suitable for operation, and in the ultimate prognosis.

Glomic Tumour of Forearm.

Dr. CHARLES SIMARD (Montreal) described a case of glomic tumour of the forearm. These tumours, which were of uncommon occurrence, were first described by Prof. Masson in 1924. Their most frequent site was under the nail or in the finger pulp, but occasionally they were found in other areas of the body. The subungual tumours were small, bluish in colour, and were accompanied by piercing, almost unbearable pain. Histologically the tumour had a superficial resemblance to an angioma; but in addition to the vessels there were fusiform and epithelioid cells, and numerous nerves of the myelinised and sympathetic type. It was probable that these tumours arose from the glomus apparatus, which occurred under the nail and in the Luschka gland of the coccyx. This apparatus consisted of vessels, surrounded by epithelioid cells and nerves, and was believed to be a regulator of the peripheral circulation.

Prof. J. H. TEACHER (Glasgow) read a paper on the

Physiology and Pathology of the Endometrium.

His remarks were largely confined to an interpretation of a number of lantern slides. He said that though the menstrual cycle was commonly supposed to be governed by the corpus luteum, it was clear that menstruation might occur in the absence of ovulation. The presence of a corpus luteum was indicative merely of ovulation with or without subsequent implantation on the endometrium. He was of the opinion that in the human subject menstruation normally occurred in regular cycles, while ovulation occurred at irregular intervals.

Prof. J. B. COLLIP (Montreal) took pains to emphasise that the α or œstral phase and the β or corpus luteum phase in human beings were different. The placental hormone could be obtained only from the human placenta; it was not present in lower animals. Dysmenorrhœa was associated clinically with the corpus luteum; at the beginning of menstruation it did not occur, because for the first few cycles after puberty the ova which were produced were not associated with a corpus luteum and were therefore non-fertile.

Intra-epithelial Growth of Carcinoma.

Prof. ROBERT MUIR (Glasgow) pointed out that the essential neoplastic change occurs first in epithelium which still has normal relationships to connective tissue, and that the break-through of basement membranes or of other normal boundaries follows on the acquisition of malignant properties by the cells. The growth and extension of cancer cells in the

epidermis might be met with in three circumstances: (*a*) The cancer cells might reach the normal epidermis by direct spread from an underlying growth, thereafter extending within the epidermis. This was occasionally seen in connexion with the nipple and in cases of skin melanoma. (*b*) The cancer cells might reach the epidermis by continuous growth from the duct of a gland opening on the surface. The outstanding example of this was Paget's disease of the nipple occurring secondarily to intra-duct carcinoma. In the early stages of the malignant change in the ducts the growth was of the intra-epithelial type, leading often to a layer of new growth of considerable thickness; but later the cells broke through the surface layer with the result that the ducts became filled with masses of cancer cells. Intra-epithelial growth might also be observed in the acini. Both in the ducts and in the acini the intra-epithelial growth might be widespread, and the disease might originate in multiple foci as well as spread directly. (*c*) The cancer might start in the epidermis itself and spread within it, instead of infiltrating the subjacent tissue as was usually the case. In some apparent instances of this the point of origin might be in the skin appendages. As examples might be cited Paget's disease occurring in extramammary sites, and probably Bowen's disease.

In all the three circumstances cited the growth of the cancer cells in the epidermis apparently met with considerable difficulty and was therefore relatively slow; in fact it would appear that it was only in the deeper parts of the epidermis that active growth could occur at all. Sometimes the cancer cells could be found only singly or in small clumps, and nearly all in a more or less degenerated condition. But in certain cases all intermediate stages could be met with between such degenerated cells and masses of cells that presented the features of cancer cells and were undergoing active mitotic division. The cells in the epidermis were restrained from breaking through this tissue and infiltrating the cutis; he said that he had, in fact, never seen a clear example of re-passage from the epidermis to the connective tissue, though the possibility of this occurrence could not be excluded.

The growth of cancer cells in the epidermis led to a definite reaction in the cutis characterised by the formation of new capillaries and an extensive infiltration with leucocytes, plasma cells, and occasionally eosinophils. When the growth within the epidermis was discontinuous, a definite relationship might be recognised between the affection of the epidermis and the underlying cellular reaction.

Phosphatase of the Blood Plasma in Bone Dystrophies.

Prof. H. D. KAY (Toronto) said that phosphatase was the only intracellular enzyme about which much was known. There were numerous phosphoric esters in the body, many of which were capable of forming soluble salts of calcium. The action of phosphatase was to hydrolyse these salts, and convert them into the insoluble calcium phosphate. In normal plasma there was a small quantity of phosphatase, equivalent to about 0·15 unit. This quantity was greatly increased in bone dystrophies, such as fragilitas ossium, rickets, osteitis fibrosa, osteomalacia, osteitis deformans, and advanced secondary carcinoma of bone. A marked rise in phosphatase was confined almost exclusively to bone disease, and was apparently a phenomenon which occurred secondarily to the development of the lesion.

Coal-miner's Lung.

Prof. S. LYLE CUMMINS (Cardiff) reported on a series of 38 post-mortem examinations of coal-miner's lung. He considered that anthracosis occurred especially in lungs which were silicotic, and in which the lymph vessels had been largely occluded by fibrous tissue. In normal lungs silica formed only about 1 per cent. of the ash. In one series of his cases, which had not been attended by lung symptoms during life, the silica formed 5 to 20 per cent. of the ash; while in another series, which had been accompanied by clinical symptoms, it reached a figure of between 25 and 42 per cent. The relation between the amount of carbon and of silica in the lungs was very close. He pointed out that in coal-miners silicosis did not seem to predispose to tuberculosis in the same way as it did in gold-miners. Another point of interest was that caseous tuberculous lesions did not tend to break down in anthracotic lungs; hence the sputum was often negative.

SECTIONS OF TUBERCULOSIS AND DISEASES OF CHILDREN.

A DISCUSSION in the combined sessions was opened by Dr. MAURICE MCPHEDRAN (Philadelphia) with a paper on Some Aspects of Prevention of

Tuberculosis in Children.

The interaction of seed and soil, of infecting organism and host, produced, he said, a baffling and complex disease. For those investigating the pathogenesis, epidemiology, and clinical manifestations of pulmonary tuberculosis, the dominant considerations were, he thought, the duration and intensity of infection or contagion, and the factors of race and age. He showed slides of pulmonary lesions in childhood and adolescence, and discussed their significance and correlation with each other. To get an accurate idea of the constitution, relation, and course of these lesions it was essential to make serial and multi-angular examinations—sometimes stereoscopic ones. X ray exploration of the living lung must be interpreted in terms of pathological study of the excised inflated lung. This brought out the necessity for revising the present criteria of activity. It was obvious that there could be progressive pulmonary lesions without clinical symptoms. The sedimentation reaction sometimes gave confirmatory evidence, but such changes might be transient. Non-tuberculous infiltrations involving one-third of both lungs at the base might give rise to severe symptoms and yet clear up very quickly.

THE PRIMARY FOCUS.

Dr. DAVID NABARRO (London), who read a paper on mediastinal tuberculosis in children, recalled the pioneer work of Parrot (1876) and that of Küss, Hutinel, and Ghon. The primary focus was, he said, at least as old as that of the lesions in the mediastinal glands, but fresh lesions might occur in the lungs, at first close to, later spreading further from, the primary focus; these must not be confused with the original focus. In a consecutive series of post-mortem examinations made from 1927–29 on children under the age of 12 years at Ormond-street Hospital, 67 (or 15·8 per cent.) showed evidence of tuberculous disease, while 55 per cent. of the 67 cases showed what he believed to be the primary lung focus; 14 cases were obviously primary abdominal; 3 showed tabes mesenterica; and 10 were cases of pulmonary tuberculosis in which no lung focus could

be isolated with certainty. In the whole series of cases there was only one in which a primary lung focus was unaccompanied by obvious changes in the mediastinal glands. And yet he had come across no case in which a primary lung focus had been diagnosed during life; the shadow of a focus near the hilum would be obscured by that of the adjacent glands. Shadows might depend upon the calcium content of the lesion, and observations were being made upon this point.

BACTERIOLOGY.

Dr. R. M. PRICE (Toronto) read a paper on the bacteriology of tuberculosis in children. All three types of tubercle bacilli—human, bovine, and avian—were, she said, found in children, the first being the most important. Bovine infection was conveyed to children through infected milk. Avian infection was occasional. The relative frequency of the different types was being studied at the University of Toronto in children under 14 years of age. Of 65 cases of medical tuberculosis (45 meningeal, 20 pulmonary) all but two were due to the human type; of 75 cases of bone and joint tuberculosis all but three were of this type; of 30 cases of cervical adenitis, 17 were of human and 13 of bovine type; of 20 cases of renal tuberculosis, all but two were of human type. Tuberculosis of tonsils showed six human, three bovine; of adenoid tissue, four human and one bovine; of peritoneum and mesentery, one each, both bovine. One case of generalised glandular tuberculosis was of avian type. In the majority of the 87·3 per cent. of cases of human bacillus infection a history of contact with pulmonary tuberculosis was obtained, most of these showing also evidence of tracheobronchial or pulmonary disease. The 26 cases of infection of bovine type, the youngest an infant of 5 months and the oldest 12 years, without exception came into Toronto from towns and villages in Ontario where pasteurisation of milk was not carried out, every child in the group having been fed on raw milk. In the city of Toronto, where pasteurisation was compulsory and had been rigidly enforced since 1915, not a single case of bovine infection was encountered.

PREVENTION.

Dr. W. J. DOBBIE (Weston, Ontario) spoke on the need for more adequate measures of prevention. While there had been during the past 30 years a marked reduction in the mortality from tuberculosis in the United States and in Canada, it was not so clear, he said, that there had been a similar decline in the infection-rate. Could anything be done now to prevent the infants and young children of to-day from requiring treatment for tuberculosis in 25 to 30 years' time? The failure in preventive treatment was not so much a lack of knowledge as the omission to apply it actively and persistently. In the emphasis now being placed on original research lay a danger of laxity in the application of knowledge already attained. Since tuberculosis of the bovine type was not yet a negligible factor in morbidity, the first maxim in prevention was to pasteurise milk whenever possible; to boil any milk not properly pasteurised before its use as food; and to produce other milk products under such conditions that there was no danger of transmitting disease. With regard to infection with human type, there was ample evidence of the need for some adequate measure to protect young children whose whole world, for practical purposes, lay within the confines of the home. The second maxim then was that no child under 16 should live in the same home as that occupied by a person suffering from active or open pulmonary tuberculosis, or in which there was a possible contact with a tuberculous person. A third maxim was that measures should be taken to prevent expectoration in public places, and that educational propaganda to this end should be continuously employed. This would prevent the street, which was the playground for so large a proportion of children, from being a source of infection to children over three. Other precautions included an efficient system of medical inspection in schools—no person having tuberculosis should be employed in any school building in any capacity whatever except in a special class or school for tuberculous children—and prolonged treatment of tuberculous children. Public health education would seem to be the chief hope until some practicable method of vaccination had been approved for general application.

PASTEURISATION OF MILK.

Dr. H. C. PARSONS (Toronto) said the necessity for pasteurisation was shown by the presence of tubercle bacilli in milk to the extent of from 14 to 20 per cent. of the samples examined, and by the proved transmission of tuberculosis to man as a disabling or fatal disease. The ideal would be the provision of pure tuberculosis-free herds, but since this could not be yet, some form of safe control of an infected milk-supply was essential in the meanwhile. Pasteurisation provided this control, as was proved by the presence of tubercle bacilli in the milk before pasteurisation and their absence afterwards. Winslow and Gray, who compared the tuberculosis mortality in five-year periods before and after pasteurisation was introduced in Toronto, found no change in the mortality from pulmonary tuberculosis at all ages, but in the age-period 1–4 years a reduction in the mortality from non-pulmonary tuberculosis proportionate to the extent and efficiency of the pasteurisation. The records of the Hospital for Sick Children showed a similar reduction by one half. Analysis showed that in 1911–15 cases from the city amounted to 84·3 per cent., and from the country 15·7 per cent. In 1924–28 the corresponding figures were 54·2 and 45·8 per cent. So that in the latter period 45·8 per cent. of the cases did not come from a pasteurised area. It was during this second period that the material for Dr. Price's work was supplied. Pasteurisation, said Dr. Parsons, did no harm to the milk; if by some mischance a few vitamins were destroyed they could readily be replaced. With a properly supervised system, however, such errors should not occur. The keeping qualities of milk were improved by pasteurisation, and other infections such as typhoid, scarlet fever, diphtheria, and septic throats could be controlled.

HOUSEHOLD INFECTION.

Dr. BRUCE CHOWN (Winnipeg) said that the ætiological agent as far as pulmonary tuberculosis in young children was concerned was the human tubercle bacillus—i.e., household infection. Its main source was the family. In early cases there were no general symptoms; most of the children were well nourished. There were also, as a rule, no local symptoms; cough and fever were uncommon. The three major points in diagnosis were: history of contact, tuberculin reaction (intracutaneous), and the skiagram. Of these, the latter was all-important, provided the plates were good. If the tuberculin test was positive no child could be said to be non-tuberculous until carefully X rayed. Prognosis was better than it used to be; increasing emphasis should be laid on prevention of reinfection.

Dr. J. A. JARRY (Montreal) said the problem of the dwelling in the spread of tuberculosis was contemporary with the abnormal and rapid growth of cities. A survey of 1256 cases of tuberculosis in Montreal, 1080 being in their own homes, the others living in refuges or boarding-houses, indicated that the foremost problem was family contamination; there was a high percentage of malnutrition among children living with tuberculous relatives. Both these dominating problems were dependent for their solution on the education of the people and the protection of childhood.

DISCUSSION.

In the discussion Dr. POTTENGER remarked that many rapid infections took place in areas in the lung in which there had been a previous infection. Sensitivity and allergy were, he believed, steps towards a complete immunity. The essence of the whole picture of tuberculosis was that it began in childhood. Dr. LAWRENCE (Trinidad), who had been in practice in the tropics for about forty years, said that their problems were different. There was almost no bovine tuberculosis, though they had much tuberculous adenitis. Joint tuberculosis was also rare. He endorsed Dr. Chown's views on family tuberculosis, laying much stress on the housing problem, and advocating segregation of open cases. Dr. A. TRIMBLE (Belfast) said that from the speeches listened to there was apparently no place for the stethoscope. He would like to have heard more about treatment. Removing the child from the source of infection was not treatment. There was room for work to be done on the effect of tuberculin on the blood picture. Dr. VROOMAN (Vancouver) said that for the last few years they had had a tuberculosis-free area for cattle, but they were still pasteurising most of their milk. He drew attention to the increasing prevalence of tuberculosis in the young adult. Dr. HOLBROOK thought that every school-child should have a tuberculin test every year until it was positive. Dr. F. J. COUTTS (London) also referred to the increased tuberculosis morbidity in young women, and asked whether it was certain that the modern careful treatment of children with minimal disease did not lead to increased chance of disease in later years.

Dr. MCPHEDRAN, closing the discussion, said that the fundamental point of the whole problem of diagnosis was the X ray, which was the key to approach even problems of pathogenesis and epidemiology. A child with ill-defined lesions in the lung was in danger of breaking down; and an adolescent lesion that did not remain stable for at least a year needed hospitalisation.

SECTIONS OF MEDICINE AND NEUROLOGY.

Lord DAWSON took the chair at a joint meeting of the two Sections when Sir FARQUHAR BUZZARD (Oxford) opened a discussion on

Acute Poliomyelitis.

It was fitting, he said, to discuss this disease in Canada because of the recent epidemics there, and the commendable activity of the Canadian medical men. Outbreaks in various provinces had been met by the organised employment of modern methods of treatment, but there were still gaps in our scientific knowledge. While respiratory droplet transmission was a possible but uncommon mode of spread, he felt that before more of value could be discovered on this point we required to have a method of testing individual immunity. Attempts had been made to trace the source of epidemics to infected water and milk-supplies. He did not believe that water was seriously under suspicion. Milk, however, had been proved to be a factor in the development of epidemics. It was through a study of immunity that we should be led to establish preventive measures. We needed to determine whether poliomyelitis was a localised disease of the pharynx and tonsils or a general infection; in the first case the nervous involvements would depend upon the circulation of toxins, in the second case upon the actual attack of the virus on the tissue. It was noteworthy that the virus did not flourish in the blood stream. The steps to be taken when an outbreak occurred in an institution would be simplified if J. Collier's claim, that the infection is through carriers and that all exposed individuals are infected at the same time, were accepted. There was, however, no general agreement about this. Detection and control of carriers was, however, without doubt the most important step in preventing spread. In spite of the excellent work of Flexner and Noguchi, the nature of the causative agent was not well known. The use of convalescent serum therapy, he felt, lacked the authoritative claim of a well-tried weapon. Advance was unlikely until we had discovered a biological test which would give an early diagnosis, and Sir Farquhar concluded by commending the search for it to the bacteriologist.

CONVALESCENT SERUM.

Prof. H. B. CUSHING (Montreal) said there were three arguments for the use of convalescent serum in acute poliomyelitis: (1) the argument from analogy with other diseases, which he felt to be of dubious potency; (2) animal experimentation—here the results were conclusive both for prophylaxis and treatment; (3) clinical results; although these were not as conclusive as in animal experimentation, those who had used the treatment most were its strongest advocates. There were, he said, limitations to this form of treatment: (1) The passive immunity produced lasted only three weeks. (2) Treatment was only of value if given during the preparalytic stage. (3) The difficulty of procuring a serum which was not on the market. Owing to these limitations many text-books stated that convalescent serum therapy was only practicable during an epidemic, a view with which he heartily disagreed. Every medical man, he considered, should see to it that a supply of serum was at hand.

Dr. J. M. MCEACHERN (Winnipeg) spoke of the use of convalescent serum in the Manitoba epidemic of 1928. His conclusion was that this treatment should be put in general use, even though it involved a diagnosis in the preparalytic stage.

Dr. GEORGE RIDDOCH (London) admitted hesitation in employing this treatment, but he now felt convinced of its usefulness. He questioned, however, the advisability of introducing the serum into the subarachnoid space.

VALUE OF REST.

Mr. ALEXANDER GIBSON (Winnipeg), speaking as an orthopædic surgeon, emphasised the necessity for complete rest during the period of recovery. He deprecated the tendency to apply massage too ardently, and suggested that light skin stroking was preferable. He had no use for electrical stimulation. He spoke of the advances made in the stabilisation of various joints.

Dr. R. G. ARMOUR (Toronto) was impressed with the high incidence of gastro-intestinal upsets during the prodromal stage. He believed that prompt purgation decreased the liability to severe permanent

damage. He emphasised the value of rest, and said that the only cases he had seen in which the severity of the paralysis had increased, after 48 hours following its onset, had been active during that period.

EARLY DIAGNOSIS.

The Chairman (Dr. E. I. SPRIGGS, Ruthin) then expressed a desire for information regarding the early diagnosis of acute poliomyelitis, and called on Dr. MCEACHERN, who outlined the signs and symptoms as seen in the Manitoba epidemic. The prostration, he said, was usually greater than the temperature and pulse would suggest. The patient frequently seemed dazed; there was slight rigidity of the neck and definite rigidity of the back. Kernig's sign was not marked. Abdominal reflexes were often absent but might be exaggerated; knee-jerks were absent in 32 per cent. of cases. The tâche cérébrale was almost always present. Gastro-intestinal upsets were common. Spinal fluid examination revealed the presence of cells up to an extreme limit of 2000 per c.mm. At first the cells were polymorphonuclears, but these were replaced by lymphocytes at a later stage. The globulin-content was increased.

REPLY.

Sir FARQUHAR BUZZARD agreed that it was necessary to be forearmed against epidemics. He still thought that crucial diagnostic tests were wanting, but admitted there was much to be hoped for from the use of convalescent serum. He agreed with Dr. Gibson's remarks on massage and electrical stimulation. He advocated swimming as a valuable form of exercise in the stage of repair.

REVIEWS AND NOTICES OF BOOKS

Osler's Principles and Practice of Medicine.

Eleventh edition. Revised by THOMAS MCCRAE, M.D., F.R.C.P. Lond., Professor of Medicine, Jefferson Medical College, Philadelphia; Physician to the Jefferson and Pennsylvania Hospitals, Philadelphia; formerly Associate Professor of Medicine, Johns Hopkins University. London: D. Appleton and Co. 1930. Pp. 1237. 30*s*.

THE task which Dr. McCrae has to face each time he brings out a new edition of this work must grow more embarrassing with the passing of the years since Osler's death. The vast reputation and world-wide popularity must depend largely on the retention of the personal note. Dr. McCrae has succeeded in keeping to Osler's style and outlook despite the fact that some sections have had to be very considerably revised and in parts rewritten. The most important alterations have been made in the section on nephritis in general. Hæmorrhagic nephritis is introduced and described for the first time in these pages as a clinical entity; the old term chronic parenchymatous nephritis is now discarded in favour of the much more accurate and descriptive title chronic nephritis with œdema. More attention is paid to nephrosis, and lipoid nephrosis is discussed in some detail, taking the place of a rather indefinite condition which up to now has been called toxic kidney. Considerable changes have been made also in the pages on purpura, which is now classified in terms of platelets—namely, thrombopenic or non-thrombopenic. It is interesting to see the clinical condition which formerly used to be known as purpura rheumatica included and amplified in the disease now given the title of anaphylactoid purpura. Minor additions are made to the section on the treatment of syphilis, bismuth and fever therapy being added; slight alterations are to be noted in the sections on diabetes mellitus, cardiospasm, and elsewhere. Cardiac asthma is included for the first time in this edition, but there is no mention of venesection in the treatment of this condition—a regrettable omission. Among important new diseases included for the first time are hypoglycæmia, subacute leukæmia, post-vaccinal encephalitis, and myelophthisic splenomegaly. The paragraphs on such obscure diseases as melioidosis and lipoid histiocytosis are too scrappy to be of value.

Despite the changes necessary to bring this great work up to date, Osler remains to a large extent Osler, and as such the most readable text-book of medicine.

Anatomie médico-chirurgicale de l'abdomen: la région thoraco-abdominale.

Third edition. By RAYMOND GREGOIRE, Professeur agrégé à la Faculté de Médecine de Paris. Paris: J. B. Baillière et Fils. 1930. Pp. 188. Fr.45.

THIS book, the first volume of Prof. Gregoire's series of monographs on the medico-surgical anatomy of the abdomen, is a thoroughly sound and very interesting work. Beginning with a description in detail of the thoracic wall covering the upper abdomen and of the diaphragm, the author proceeds to deal with the viscera covered by these structures—the liver, stomach, pancreatico-duodenal complex, spleen, with all their peritoneal and other connexions and relations. In all these matters Prof. Gregoire exhibits the lucid powers of simple description which distinguish his writings, and, in addition to the cadaveric anatomy which forms the basis of all such work, has brought in the consideration of the various organs from the clinical and operative points of view, with radioscopic references and other details of living anatomy. His book is thus of great value to the medical man who has to deal with diagnosis and treatment within this region. Although in many ways the author disagrees with the classical anatomical descriptions, he gives the reasons for his opinions, and not many modern anatomists will fail to support his views. We notice that Prof. Gregoire describes the stomach as supported or suspended by a "suspensory ligament," comparable with that attaching the liver to the diaphragm between the two layers of the coronary ligament, and made of fine fibrous tissue with a certain amount of interposed fat; it passes from the lower aspect of the left leaflet and pillar of the diaphragm to the upper and back aspect of the fundus and upper end. This structure is certainly (at the least) a frequent feature, and we fancy that many who observe it class it among the "pathological" adhesions, whereas Prof. Gregoire looks upon it as a physiological development; it would seem, on the whole, that the latter view is the more justifiable. The presence of this attachment certainly accounts for the constant position of the fundus, while the remainder of the stomach moves with the changing position of the subject. We cannot agree, however, with the description of the retropancreatic bands or layers, which include the band of Treitz, for the developmental ground on which the description is based is schematic and, in our view, incorrect. To

make the band of Treitz, for example, owe its formation to the fusion of peritoneal layers is not in accord with the actual facts, for this band is clearly formed long before these layers—between which it lies—are even in actual contact. This, from the clinical point of view, is a matter of little moment and is almost (if not altogether) the only statement in the book with which we seriously disagree. The descriptions of vessels are excellent, and the whole work is one which can be read with advantage by any medical man, whether he is an anatomist or a practical clinician. He will find in it many things which he may not know, and will discover that there are ways of looking at anatomical matters which differ from those to which he is accustomed.

Bowlby and Andrewes' Surgical Pathology and Morbid Anatomy.

Eighth edition. By GEOFFREY KEYNES, M.A., M.D., F.R.C.S., Assistant Surgeon, St. Bartholomew's Hospital. London: J. and A. Churchill. 1930. Pp. 644. 21*s*.

"Bowlby's Surgical Pathology" was originally written 43 years ago. It has been frequently revised during this long period, and up to the last edition in 1920 the late Sir Anthony Bowlby took an active part in its production. It is thus not remarkable that the book retained in many respects its old character, being based upon a conception of surgical pathology and views of what is essential and basic in the science which are notably different from those in vogue to-day. Mr. Keynes was faced with a difficult problem in undertaking the revision of such a book. Judged from the point of view of maintaining the traditions of the old book he has been strikingly successful, but the attempt to introduce the modern outlook of the surgical pathologist has not been very energetically pursued. The surgeon has become more and more a physiologist as well as an anatomist. He has returned to the ideals of John Hunter, he has become more alive to the importance of the intricate vital processes which his gross interference with the structure of the body so profoundly disturbs. Glimpses of what this book might have meant to the elementary student can be gathered by reading for instance the succinct account of surgical shock, but how is it that a description of the union of fractures can appear without the mention of the part played by osteoblasts or osteoclasts, nor a definition or description of osteoid tissue? If a student is to read a separate volume of this size in addition to his text-book of surgery he should be provided with better accounts of what is known of calculus formation or a more credible one of the pathology of urinary back-pressure. Again, in the chapter on genito-urinary tuberculosis, having said that the primary lesion in this tract is usually in the kidney or epididymis, the author immediately proceeds to describe the morbid changes in the bladder, and then those in the ureters, before writing of the important primary lesion in the kidney. This arrangement, of a past age, is calculated to give the student a wrong perspective of the disease. The author has, obviously, been fettered by the construction of the forerunning editions. It is to be hoped that a new edition will be speedily demanded in order that the author may make alterations which will make this otherwise well-written, accurate and readable book conform to the modern outlook.

Alimentary Anaphylaxis.

Gastro-intestinal Food Allergy. By GUY LAROCHE, CHARLES RICHET Fils, and FRANÇOIS SAINT-GIRONS. Foreword by Prof. CHARLES RICHET, Faculty of Medicine, Paris. Translated by MILDRED P. ROWE and ALBERT H. ROWE. University of California Press. 1930. Pp. 139. 9*s*.

THE title of this little book is itself challenging. The translator says in his preface "The authors have used 'anaphylaxis' for 'allergy' as it is used in this country" (i.e., U.S.A.). The French authors define alimentary anaphylaxis (page 27) as "all the reactions arising from a second ingestion of wholesome and normally well-tolerated foods which, when first ingested, give mild or no reactions whatever." That definition will serve well enough for orthodox anaphylaxis, but will it serve for all that American authors mean by allergy? The French authors then go on to describe hereditary sensitivities (page 74) which are easily recognised as allergy; these are not in accordance with our ideas of orthodox anaphylaxis. Moreover, in their chapter on diagnosis (page 122) they say "it becomes necessary to try to differentiate anaphylaxis from the intolerance that certain subjects have for certain foods"—i.e., between anaphylaxis and allergy. The main defect of this book to the British eye seems to be a failure to make identical (or to distinguish between) "anaphylaxis" which we know as chiefly a disease of animals, and "allergy" which is chiefly, possibly entirely, a disease of human beings.

French work on the subject of allergy or the toxic idiopathies has remained curiously isolated from work in other countries; it is all the more necessary, therefore, to get a clear idea of what has been done in France, and the book gives that very well, though the work of Widal and his school on hæmoclasis is, perhaps, under-represented, being dealt with in a chapter of less than two small pages. There is some elaborate speculation on pathogenesis; nine suggestions are put forward of the probable cause, with "undue permeability of the mucous membrane to unaltered proteins" as the favourite; no mention is made of the Prausnitz reaction and of the evidence it affords that unaltered proteins pass through the gut wall of every one of us. The cases quoted of "alimentary anaphylaxis" are extremely interesting; they read as if they had been carefully reported, regardless of whether they illustrate or undermine the author's theories and definitions.

In a long preface Mr. Rowe makes clear the American reaction to the French point of view.

Public Health Aspects of Dental Decay in Children.

By RAYMOND FRANZEN, Ph.D., Director of Research, Health Study, American Child Health Association. New York: American Child Health Association. 1930. Pp. 121.

THIS monograph, which is one of a series published by the above association, is an attempt to evaluate some of the factors connected with dental hygiene which may have a bearing on the public health aspects of dentistry. In this sense it is significant, for though much has been written on the dental treatment of school-children there is so far little realisation that public dentistry is not private dentistry on a larger scale, but involves different methods of approach, just as the tuberculosis problem as it affects the individual differs from the same problem affecting the population as a whole. Dr.

Franzen has set himself certain problems for investigation, such as the question whether the liability to dental caries operates on the organism with equal strength throughout lifetime or whether it is periodic. Is the liability to dental caries a function of the tooth or the organism? What effect have uncorrected enamel defects on the development of dental caries? At first sight it might seem that these questions, which have often been discussed from various angles, have no especial bearing on public dentistry. But a little reflection shows that they are cardinal problems and that their solution, were it possible, would affect materially the principles underlying school dentistry. A very large number of children were examined by skilled observers. Elaborate statistical methods were used which bring out some interesting points. Thus Dr. Franzen concludes from the evidence that the liability to dental decay is periodic, and that it is a function of the individual rather than of the tooth. On the important question whether there is any relation between uncorrected enamel defects and the development of dental caries the author's conclusions are significant. It is well known that the molars when they erupt often have crevices in the enamel. Experience shows that these often become the seat of caries and it has become the practice of many dentists to cut out all deep fissures and fill them, not because they are carious but as a prophylactic measure. Dr. T. P. Hyatt has gone further and advocates that all fissures, whether deep or not, should be invariably cut out as a routine practice. Such a measure takes time and involves some discomfort or even pain to the small child on whom it is performed. Franzen finds no evidence to support such a line of treatment as part of dental prophylaxis. It was not found possible to distinguish between the molars liable to decay on account of enamel defects and those not liable. First molars in children of 12, in whom these teeth had been present for at least six years, were found to have as much enamel defect as non-carious molars in children of six. The author argues that it is not sound treatment to undertake operative interference on many units merely because it prevents disease in some, and that more reliable criteria are needed before it is possible to distinguish between enamel defects which predispose to caries and those which are without influence on its incidence.

Those concerned in public dentistry should not overlook this monograph, which appears to us to indicate a line of study with many possibilities.

The Metabolism of Tumours.

Edited by OTTO WARBURG, Kaiser Wilhelm Institute for Biology, Berlin-Dahlem. Translated by FRANK DICKENS, M.A., Ph.D., Courtauld Institute of Biochemistry, Middlesex Hospital. London: Constable and Co., Ltd. 1930. Pp. 327. 40*s*.

WARBURG'S important work "Über den Stoffwechsel der Tumoren," published originally in 1926, has now been made available to a wider circle of students of biology by its translation into English. The book is a collection of papers from Prof. Warburg's laboratory dealing with biological oxidations, and more particularly with the peculiar metabolism of the cancer cell. The translation is excellent, and the English edition will make a strong appeal to all those who wish to use the manometric technique in the study of chemical reactions, since its theory and practice are described in great detail. Three papers from the German edition are omitted in the translation; a lecture giving Warburg's general views on the cancer problem at the date of publication, and two short papers dealing with iron estimations in tissues, and the checking of tumour glycolysis by synthetic colouring matters. Some more recent researches on metabolic problems are included, and an interesting introduction written by Warburg, in which he reviews his present outlook upon the cancer problem. Work from other laboratories has caused him somewhat to modify his earlier ideas. The essence of his present point of view is stated in the last paragraph of his introductory remarks. "Interference with the respiration in growing cells is, from the standpoint of the physiology of metabolism, the cause of tumours. If the respiration of a growing cell is disturbed, as a rule the cell dies. If it does not die, a tumour cell results. This is no theory, but a comprehensive summary of all the measurements at present available."

After Consulting Hours.

By CHRISTOPHER HOWARD, M.R.C.S., L.R.C.P. London: William Heinemann, Ltd. 1930. Pp. 283. 7*s*. 6*d*.

THIS book, written by a general practitioner, will give pleasure to any other of the same kidney who reads it. The author is evidently keenly interested in the numerous problems brought before him in practice and is not content merely to read the solutions offered by others. He likes to think out answers for himself, and fortunately for us he has put on paper many of his cogitations. They show him to be a man of ideas, thoroughly up to date in medical knowledge, and possessed both of a sense of humour and a capital style of writing. We get also the impression of a practitioner who is both a kindly adviser and a complete man of the world with a critical appreciation of old brandy. He goes so far as to give an expert prescription for the making of that "napoleon brandy" which is so often offered to those who do not know any better. The book contains eight different chapters of "reflections" of which, perhaps, the most enjoyable are the general ones. Here we find some illuminating remarks on the treatment of the chronic alcoholic, on how to behave as regards drink when you visit America, on constipation, endocrinology, and spiritualism. The two last Mr. Howard brackets as "the most important things that are being discussed and worked out to-day," and whether or not one agrees with this judgment, his arguments are potent in support of it. The writer is amusing and much to the point in what he says of phobias, of flowers in nursing homes, of cocktails, and of beef extracts. He introduces us to anthomania and to business men who eat too many sweets. His remarks on sun bathing and on climate generally are entertaining, and we like especially this on "Como and Kenya, both of which are known to have a stimulating effect upon the nerves and the sexual organs. The comparison between the common factor in these two places . . . would be of interest." Mr. Howard is an expert on various injection treatments and writes of them in a way which will be of the utmost value to colleagues of less experience. Slight blemishes include the entitling of the chapters. "Some appendicular reflections," for example, we regard as a horrid and unmeaning phrase quite out of keeping with the author's general style. What did any appendix ever reflect unless, perhaps, a stercolith? And we suggest for the next edition the omission of the word hot before fomentation.

THE LANCET.

LONDON: SATURDAY, OCTOBER 4, 1930.

CENTENARY OF THE BRITISH ASSOCIATION.

THE British Association for the Advancement of Science was founded in 1831. It purposes to celebrate its centenary next year by meeting for the first time in London, and the selection of General SMUTS to occupy the presidential chair on that occasion is an elegant summary of the aims, principles, and achievements of the Association during 100 years. Of the value of what it has done for the promotion of natural knowledge there cannot be two serious opinions, and if it does not now occupy quite the predominant place in the annual cycle of scientific progress that it did 50 years ago, the change is due to no deterioration of its own qualities, but to the great increase in the number of specialist congresses, conventions, and meetings in which particular branches of knowledge are cultivated.

The Association has, from the first, catered for all sorts of pure and some kinds of applied science, and it has always contemplated the interests of the amateur as well as the professional. Those who go to the meetings need not attend to their own subjects; greatly to their advantage, physicists may come to the sessions of the zoologist, and botanists listen to the economic geographers. Medical men are in a particularly advantageous position, for there is no section of medicine or even of pathology, and if they would attend the meetings in larger numbers than they do they would find that they could have an excellent busman's holiday as it were on a tram or a locomotive. This criss-crossing between the various compartments into which science has, for practical purposes necessarily, been divided is an achievement which those who love the progress of knowledge as a whole greatly desire; it is extremely difficult to do it at all effectively, but the British Association and the weekly *Nature* do more towards this end than any other enterprises in this country. One great change in the personnel of the meetings which has happened since the Association was founded is the increase in the relative preponderance of professional scientists as compared with amateur devotees. Professionalism and the possibility of careers in research have not proved an unmixed blessing; they have simply been inevitable. But they have, we may be grateful, by no means obliterated the amateurs. In absolute, if not in relative, numbers there are probably at least as many of them as there ever were, and the annual meetings of the Association give them an exceptional chance either as talkers or listeners to help in promoting the common good.

We are thankful therefore for what the Association has done in the past and we wish them all success in the future. And they have a special scheme in hand to celebrate their centenary which we commend to the goodwill of our readers. They desire to raise an endowment fund of £40,000 to be used mainly in three directions. In the first place money is needed towards the expenses of the annual gatherings, which at present are a considerable charge on the place in which they are held; this may sometimes prevent a meeting taking place in an otherwise suitable town, especially if it is far away in the Dominions. Secondly, money is needed by many of their committees which are charged with special inquiries. Under this heading there is no suggestion that workers should be paid; the Association has always been an organisation for the encouragement of voluntary work for the advancement of science. But many investigations cannot be undertaken without a considerable expenditure on materials and apparatus. And thirdly, further funds are desirable in order that the beneficent gift of Darwin's house, Down House, by Mr. BUCKSTON BROWNE, F.R.C.S., may be developed and realised as it should be. It is a good cause; the sum asked for is not immoderate as things go nowadays; we hope they may get it.

THE BEST SANATORIUM.

THE love of home being strongly marked in our race, the worst sanatorium, according to the firm belief of the patient, is usually the one in which he happens to be. This conclusion emerges from a recent exchange of view in our correspondence columns and would have become clearer the longer the correspondence continued. Individual impressions form no good guide for others, for they are determined largely by disposition or temperament. But there is a positive as well as a negative side to this. Every resort, as W. R. HUGGARD wrote in the last chapter of his "Handbook of Climatic Treatment," has a more or less individual stamp, almost a personality. This *genius loci* leads people either to abhor places wherein they have suffered hope deferred, or to visit again and again and to regard with affection places where they manage to get well without brooding over their physical woes. And then follows a paragraph by this wisest and wittiest of Irish physicians that might well be embroidered on the memory of everyone who has to deal with phthisical patients:—

> "Then the mental and emotional nature of the patient must be regarded. Has the patient resources in himself, and will the proposed health resort harmonise with his disposition? Some persons like a quiet, some a gay place, some are content anywhere. Some prefer to travel alone, and are wearied or irritated by compulsory association with strangers, some prefer company. Some require with them a guardian or caretaker; others, a companion; others again, a nurse; and others, a servant. One man may not be happy without his wife; another may not know what peace of mind is unless she is away. All these points have to be taken into account; and they can generally be divined or ascertained without intrusion into private family history."

Quantitatively, the choice of climate can never

be a large element in recovery from tuberculosis. At all times, and now more than ever, economic pressure makes it necessary for most people to get well as near home as possible, and there is comfort in the dictum that the healthy climate is one that offers frequent change from warmth to coolness and from sunshine to shade, or vice versa. If we accept, as most of us do, Dr. BURTON WOOD'S contention (p. 730) that the essential treatment for all forms of active tuberculosis is rest, it is not at the active stage of the disease that the particular kind of fresh air is of much moment. Anywhere will do where bed can be enjoyed for a long period with an easy mind. But if fresh air is not the primary need of the patient with active tuberculosis, it is the open-air habit of life that might have prevented him from getting tuberculosis and will keep him free from relapse after recovery. No one in the correspondence mentioned OTTO WALTHER, of Nordrach, which is the more surprising as it was through him that sanatorium treatment came to us in the form it did. BREHMER and DETTWEILER previously had dealt chiefly with advanced cases on institutional lines; there was a valetudinarian atmosphere throughout. WALTHER'S patients in the nineties were almost all English, with a large sprinkling of medical men and women who became pioneers of the hygienic treatment of tuberculosis in this country. His pupils gradually sloughed off the curious excrescences of Nordrach treatment. Their patients at Nordrach-on-Such and Such may at first have had to eat great slabs of beefsteak, and begin again if they turned against it; they may have been encouraged to walk through little streams on the way from dining-room to dormitory. But there is no doubt that the open-air life with its invigorating exposure to sun and air and wind is largely due to the genius of WALTHER'S teaching, which owed little to material equipment, for, beautiful as are the narrow valleys and tree-covered slopes of the Black Forest, the winter climate has little to recommend it, and we have it on record that boots grew mouldy in a single night. It is this habit of life which came from Nordrach that has spread little by little into the life of the community, and has opened unwilling bedroom windows, even in Harley-street.

And yet perhaps there may be a little more in the Alpine climate than the protagonist of home treatment may willingly admit. It can hardly be gainsaid that the dry wind-free sunny climate of the high altitude stations is a factor which England cannot provide. Witness thereto is the number of ex-patients who inhabit these stations just because they have found there the conditions which maintain their equilibrium. It is this which gives to Davos and Meran and Denver the appearance of sophistication; as in any other colony the acute and curable cases come and go, the experienced poitrinaires stay and accumulate. For this reason too we owe to these stations most of our comparative knowledge of methods of treatment. Local rest in the form of artificial pneumothorax has, in Dr. WOOD'S opinion, at least doubled the chance of recovery in pulmonary tuberculosis, and it would be ungenerous to forget that, while it was CARLO FORLANINI, of Pavia, who first advocated the treatment, and LUDOLPH BRAUER, of Hamburg, who used it years before it reached this country, it was at the hands of LUCIUS SPENGLER at the Schatzalp, Davos, that artificial collapse was first done under radiographic control and the technical difficulties were realised and surmounted. Everyone has at the end a spot of tubercle—the colloquialism is not ours but VIRCHOW'S—and PIRQUET made it certain that nearly every town child has played a match with the tubercle bacillus before reaching maturity. Natural methods, aided by common sense and reasonable parental care, have been successful in curing most of these. The best sanatorium then is one that follows most closely natural methods of cure.

THE ELECTROCARDIOGRAM.

GRAPHIC records of the electrical phenomena accompanying the heart-beat were obtained by WALLER in 1887, using the capillary electrometer, but it was not until some sixteen years later that the invention of the string galvanometer by EINTHOVEN made such records available for clinical purposes. EINTHOVEN'S galvanometer is not, as might be supposed, an extraordinarily sensitive instrument; more sensitive galvanometers are used for other purposes. The peculiar feature which renders it suitable for this particular type of work is its rapidity of movement. Instead of swinging slowly back to its base line it returns to zero remarkably quickly, and is therefore capable of recording a series of rapid changes of potential which a more slowly moving galvanometer would be incapable of following.

A series of rapid changes of electrical potential accompany each heart-beat, and can be demonstrated in the laboratory by means of a pair of non-polarisable electrodes placed on the surface of the exposed heart. Such a record is known as an electrogram. The clinical counterpart of this record—the electrocardiogram—is obtained by leading off from two points on the surface of the body. For the sake of convenience the points usually chosen are the hand and foot. In this procedure the tissues of the body behave as a fluid-conducting medium surrounding the active organ; the electrocardiogram may be compared to a record obtained in the laboratory from an exposed heart lying on a sheet of wet blotting-paper, the electrodes leading off to the galvanometer being connected, not to the organ itself, but to points on the blotting-paper situated at some distance from it. The various deflexions in the electrocardiogram are therefore indirect records of what is happening in the heart; they depict the electrical disturbances set up by the contraction of the heart in the surrounding medium. If one excludes the electrical disturbance accompanying auricular systole, the deflexions in the remaining part of the electrocardiogram may be divided into two groups. The first of these comprises a series of rapid deflexions of fairly large amplitude, and is known for convenience as the "Q R S complex."

It represents the electrical disturbance associated with the spread of the excitation wave through the ventricles. In records obtained from normal subjects the entire duration of this initial group of deflexions is not more than a tenth of a second. Then for a period which varies in accordance with the heart-rate and other factors the galvanometer records a straight line, the string remaining at rest in the zero position. Finally, the subsidence of the state of excitation in the ventricles is represented by a slow deflexion of smaller amplitude known as the T wave.

Under pathological conditions both the initial Q R S complex and the T wave exhibit certain characteristic deviations from the normal type. Before we are in a position to appreciate the significance of such variations it is obvious that we must understand the nature of the electrical disturbances which are responsible for producing the deflexions in the normal record. The arrangement of the muscle fibres in the heart is extremely complex, and for that reason physiologists have devoted their attention chiefly to the study of electrical phenomena in skeletal muscles; for in the case of skeletal muscle, cardiac muscle, and even nerve these phenomena appear to be essentially the same. It is well known that when a stimulus is applied to a strip of somatic muscle the part of the strip in which the excitation wave is traversing at any given moment becomes electronegative in relation to those parts of the strip which are in the resting state. Applying this observation to the heart the hypothesis was formulated that the direction of the deflexions in the Q R S complex signified activity in certain particular regions of the cardiac muscle, deflexions in one direction implying activity at the base of the heart, and in the other direction at the apex. This hypothesis was shown by LEWIS to be untenable, and the direction of the deflexions is now generally believed to be attributable not to the activity of one particular portion of the ventricular muscle but to the direction in which the wave of excitation is travelling at the moment. In a complex conducting system, such as the branches and ramifications of the bundle of His, it is clear that the wave of excitation must be travelling in many different directions at the same moment in different sections of the cardiac muscle. For example, if excitation is spreading upwards in muscle segments at the base of the heart, this will tend to produce an upward deflexion in lead II. of the electrocardiogram. But at the same time excitation may be spreading downwards in segments near the apex of the heart, and this will tend to deflect the galvanometer in the opposite direction. The form taken by the actual record therefore depends on the summation of these various factors, an upward movement signifying that for the moment the elements in which the wave of excitation is spreading upwards predominate over those in which it is spreading downwards.

A notable contribution to our knowledge of the electrical phenomena associated with muscular contraction has been made by Dr. W. H. CRAIB, an account of whose researches has just been published in the form of a monograph,[1] entitled "The Electrocardiogram," issued by the Medical Research Council. CRAIB points out that most of the classical experiments on the action current and allied phenomena accompanying muscular activity were performed on muscle, nerve, or heart preparations suspended *in air*, whereas in the living body the heart and other structures are deeply buried in a fluid-conducting medium, and not merely covered by a thin film of moisture. His experiments show that the quantity of fluid bathing a strip of muscular tissue exerts a profound influence upon the graphic record of the electrical response. Being unable to reconcile the type of response he obtained from tissues immersed in saline solution, with the old negativity hypothesis to which we have referred above, he has put forward a new idea in its place. Instead of concentrating attention entirely on the negativity of the active region, CRAIB suggests that equal emphasis should be attached to both anodal and cathodal regions between which a current flows in a conducting medium, such as an active tissue. He describes a large number of observations on the responses obtained from muscle strips immersed in saline, and finally applies the conclusions at which he has arrived to the interpretation of certain features observed in the electrocardiogram obtained from the mammalian heart. Further work on similar lines is likely to prove of value not merely to the physiologist but also to those who are faced with the still more complex problems presented by heart disease in man.

[1] H.M. Stationery Office. 1930. Pp. 57. 1*s.* 3*d.*

INTERNATIONAL LEAGUE AGAINST RHEUMATISM.—The second congress of this League took place Sept. 18th to 22nd, in Belgium and Holland, under the chairmanship of Dr. R. Fortescue Fox (President), Dr. N. M. J. Jitta (President of the Dutch Society), Prof. Labbé (Paris), and Prof. Graeff (Hamburg). The congress followed the Fifth International Congress on Physical Treatment, held at Liège, and both were largely attended by representatives of 14 countries, including many from England. At a joint session resolutions were unanimously passed calling upon medical faculties in all countries to include a course of instruction in physical treatment (theoretical and practical) in the curriculum of medical studies. The chief topic discussed by the League was Disorders of the Circulation in the Skin in Chronic Rheumatic Diseases. In an introductory paper Prof. Lunedei (Florence) described a method of recording skin temperatures and for examining the circulation in the skin. Prof. B. Prusik (Prague) read a paper on cutaneous capillaroscopy and the congestion test, Dr. J. van Breemen (Amsterdam) a short report on microcapillary appearances and low skin temperatures in rheumatic cases, and Dr. J. Foged (Copenhagen) on the general study of skin temperatures and circulation. Other papers, out of a total of 60 communications, were contributed by Prof. Kontchalovski (Moscow), Dr. Pap Lagos (Budapest), Prof. Bárány (Upsala), Dr. E. Kahlmeter (Stockholm), Dr. Brabant (Brussels) and Dr. Besse (Geneva), Dr. M. P. Weil (Paris), and Mdlle. de Putte (Liège). In Brussels Dr. J. Gunzburg, professor of physical treatment in the University, gave a demonstration of cases at the Brugmann Hospital, differing diagnoses and nomenclature being especially studied. Another series of demonstrations and discussions afterwards took place at the clinic for physical treatment in Amsterdam, directed by Dr. van Breemen. Both at the Brugmann Hospital and in Amsterdam it is understood that plans are being prepared for a larger clinic for rheumatic diseases, with beds and facilities for study and teaching.

ANNOTATIONS

SURGICAL TREATMENT OF OTOSCLEROSIS.

THE essential lesion of otosclerosis lies, so far as is known, in the capsule of the labyrinth, and it is characterised by the formation of new bone, which in many cases occludes the fenestra ovalis and fixes the stapes rigidly in its niche. In the earlier days of otology attempts were made to treat this fixation by surgical methods, but otosclerosis was not thoroughly distinguished from other lesions. The fixation was often cicatricial and the consequence of chronic "dry" catarrh or old suppuration, and the results were disappointing, since any increased mobility was evanescent even if there was sometimes temporary improvement. Attempts have also been made to obtain the desired effect by means of a permanent opening elsewhere in the capsule of the labyrinth, either in the neighbourhood of the fenestræ or into the external semicircular canal, and immediate improvement has resulted in a number of cases. The condition has, however, been inclined to relapse, and it appears essential to graft a thin membranous covering on to the new opening. One of the difficulties of surgical treatment is that bony bosses may project into various parts of the labyrinth; the round window may be occluded or the scala tympani even completely filled up, and there is a liability to secondary degeneration of the organ of Corti. Such lesions set obvious limits to surgical treatment, but degeneration of the end-organ, at any rate, can be excluded by a previous functional examination. G. Holmgren improved the technique of these operations by the use of an operating microscope, and in 1923 reported [1] four cases in which he made an opening in the promontory, with improvement of hearing in three, but the cases had only been under observation for a few months when he described them. More recently Prof. Maurice Sourdille,[2] working on similar lines, has elaborated a very complete technique. His method of operation, performed in two stages, aims at making an opening through the bony capsule of the labyrinth at the site of the prominence of the external semicircular canal and covering it with a delicate membrane grafted from the thin cicatricial tissue which lines the antrum after the preliminary operation. At this first operation the mastoid is opened, the soft parts of the membranous meatus separated from the bony canal, and the upper half of the tympanic membrane freed and displaced downward in continuity with the skin of the meatus; the bony "bridge" comprising the outer attic wall and part of the tympanic ring is resected, and usually also the incus and head of the malleus; and a flap is cut from the postero-superior wall of the membranous meatus and applied to the inner wall of the attic, thus hermetically closing off the tympanic cavity from the mastoid region. The second operation is performed a few months later; the retro-auricular wound is reopened, a flap cut from the cicatricial tissue covering the region of the external semicircular canal is turned forward, the prominence of the canal is filed through with special "rubbers," exposing but not opening the membranous canal, and the flap is replaced to cover the new opening and kept in position by paraffined gauze until the entire mastoid cavity has cicatrised. The operations are performed under local anæsthesia, and the hearing is found to improve remarkably at the moment of perforation of the bony capsule. Prof. Sourdille reports six cases completed and thirteen still under treatment; the hearing has improved in all six, in five sufficiently to be noticed by the patients' friends and relations. But no case has as yet been under observation for more than 12 months, and a final judgment cannot be made until two or three years have elapsed. The operation is delicate and difficult, but it appears to hold out a hope of improving the hearing in some cases of otosclerosis. At present, at any rate, its indications must be limited to those comparatively few cases whose deafness is so severe as to be a complete disability, and in whom degeneration of the nerve mechanism has not yet occurred.

[1] Acta Oto-laryngologica, 1923, v., 460.
[2] Jour. Laryngol., September, 1930, p. 601.

WATER SNAILS AND BATHING RASHES.

THE University of Michigan has a biological station on Lake Michigan, and it was noticed many years ago that men wading to procure specimens in certain parts of the lake were liable to a dermatitis. Its cause entirely eluded discovery till W. W. Cort,[1] professor of helminthology in the Johns Hopkins University, was sorting out snails which had been collected from the lake, and which had been placed in a bucket. A severe prickling sensation, recalling the bites of small insects, attacked the hand after it had been intermittently dipping into the water for ten minutes in the removal of the snails. The conjunction of events suggested to the helminthologist that a larval stage of some fluke was emerging from a snail and had penetrated his skin. Examination showed that from a limnæa species large numbers of a schistosome cercaria were issuing, and when a few were placed on Cort's skin they produced the typical lesions to be presently mentioned. In five of seven other persons the same sequence occurred; the other two suffered no inconvenience.

C. Matheson [2] has reported that at Cardiff, in the bathing seasons of 1927, 1928, and 1929, there were epidemics of an irritating rash—slight in the first year, considerable in the second, and less in the third. The pool concerned was an artificial lake in a municipal park, and the only persons affected were those who bathed in it. Many hundreds using a path bordering the lake entirely escaped, and the parts of the body not covered and protected by the bathing dress were mainly or even solely affected. No bites were felt. Investigation of the fauna and flora, including the bacteria of the lake, gave no help as to the cause, but a study of the literature disclosed Cort's paper. An examination of the molluscs showed that a limnæa, *L. stagnalis*, which appears to be a recent addition to the local fauna, was emitting cercariæ. On these E. L. Taylor and H. A. Baylis [3] have issued a valuable report, elucidated by beautiful drawings by Miss Rees. The cercariæ were of two kinds, only one being of medical interest. It is the same in structure as that reported by Cort, and is identified as *C. ocellata*, described by La Valette St. George in 1855. It is strongly attracted to light and to the surface of water, and closely resembles the cercaria of *Bilharziella polonica*, the adult form of which lives in the mesenteric veins of ducks. Its definitive host will

[1] Jour. Amer. Med. Assoc., 1928, xc., 1027.
[2] Trans. Roy. Soc. Trop. Med. and Hyg., 1930, xxiii., 421.
[3] Ibid., 1930, xxiv., 219.

almost certainly prove to be some aquatic bird, and it may be said with confidence that it cannot survive in man. Nevertheless, it can produce uncomfortable consequences in its attempts to do so. Within a few hours of bathing there may appear a blotchy urticarial and papular dermatitis with punctate red centres to the papules. Irritation is so intense that the consequent scratching may induce free bleeding. The duration varies greatly. In Cort's skin the papules became pustules which began to dry up after five days with rapid clearance of lesions. In a deliberate infection by Taylor on his own forearm the lesions were still very plain after four weeks, and had not altogether disappeared in seven. Light is probably thrown on this persistence by another self experiment—by H. Vogel [4] in the laboratory of the Instituts für Schiffs- und Tropenkrankheiten at Hamburg. He allowed 34 of these cercariæ to penetrate a defined area of his skin, had the whole area excised after 24 hours, cut it in serial sections, and found 11 of the larvæ in the epidermis. One was surprised on the point of escaping into the dermis, and no doubt the missing 23 had already done so to their destruction. Now when Fülleborn submitted in the same laboratory to the same surgical procedure more than two weeks after infecting his skin with larvæ of the dog hookworm, they were still there and alive, since it was not until they had been in his epidermis for two weeks that they began to produce the creeping eruption to investigate which he had the operation done. It may be, then, that persistence of the eruption after penetration of *C. ocellata* is due to persistent presence of the cercaria in the epidermis; and it is worth noting that freezing the skin with ethyl chloride is sufficient to kill nematode larvæ which persist in it, and that cercariæ are probably even more vulnerable. On the general question it is easy to point out that the annoyance to bathers will cease if the snails are eliminated or the waterfowl which are presumably concerned are driven from the lake. But the practical measures necessary to achieve this are quite another matter and not likely to be readily defined.

STUDIES IN UNTREATED MALARIA.

THE treatment of neurosyphilis by experimentally induced malaria has furnished a method by which the course of untreated malaria can be studied. At the Calcutta School of Tropical Medicine and Hygiene, Lieut.-Colonel R. Knowles, I.M.S., and Assistant Surgeon B. M. Das Gupta have been attacking the complicated problem of malaria therapy from this angle.[5] An experimentally produced case of quartan malaria was procured and systematic parasite counts made by Sinton's method, using fowls' corpuscles as an index. The subject was a Hindu male who showed pronounced symptoms of neurosyphilis and was inoculated intramuscularly with quartan malaria blood. After one unsuccessful attempt, rigors with parasites in the blood were produced within 16 days of the inoculation. Seven hours before a rigor the parasite population had reached a figure of 43,600 per c.mm.; in general it tended to fluctuate between 6000 and 10,000 per c.mm. Rigors occurred almost daily; there was no semblance of quartan periodicity and the patient was a very sick man. It was possible to contrast this primary attack with a case of chronic relapsing quartan infection; in the latter the infection was associated with low parasite counts with a tendency towards reduction of the parasites. In the experimentally induced infection no tendency towards spontaneous cure was exhibited, and a consideration of its course enables us to understand reports of extremely severe and sometimes fatal outbreaks of quartan malaria in the Dutch East Indies. It is clear that quartan malaria may become a very severe disease. By means of accurate parasite counts Knowles and Das Gupta estimated the natural powers of resistance of the patient to be such that he could kill off 95 per cent. of the parasite population at each schizogonic cycle. It is probable that parasites are destroyed only during the free merozoite stage. When once they have entered within the red blood corpuscles they are safe until the next schizogonic cycles matures. In cultures of malaria the destruction of parasites is observed to be confined to the free merozoite stage and takes place by phagocytosis by the polymorphonuclear leucocytes; but the same phenomenon has never been observed in blood films from man made in the course of naturally acquired malaria. On the other hand, such evidence as has been obtained by spleen puncture from malaria cases indicates that the parasites are destroyed by lysis rather than by phagocytosis. The primary attack of quartan malaria does not show the characteristic periodicity any more than the primary attack of benign tertian does; it is only as the infections become well established that typical periodicity is attained. Knowles and Das Gupta have also taken the opportunity to count the periods of duration of the schizogonic cycle of *Plasmodium malariæ* (the quartan parasite). In this parasite the free merozoite stage lasts one hour, the ring stage 17 hours, the young trophozoite 47 hours, the stage of schizogony 6 hours, and the mature rosette stage 1 hour. The authors believe that in ordinary endemic malaria, in untreated patients, the case mortality is not much higher than 2 per cent.; in other words, some 49 out of every 50 untreated patients recover spontaneously from their attacks of malaria, and, in their view, it is doubtful whether more than 1 in every 500 patients who contract malaria annually receives a thorough and prolonged course of quinine. We commend this study to all those interested in malariology.

[4] Derm. Woch., 1930, xc., 577.
[5] Indian Medical Gazette, 1930, lxv., 195.

BROWN-SÉQUARD.

Charles Edouard Brown-Séquard was born at Port Louis, in Mauritius, on April 8th, 1817; his father was an American sea-captain of Philadelphia, his mother a French Mauritian, and he always emphasised the fact that he was a British citizen. He died in France on April 2nd, 1894. The attempts of his compatriots to raise some memorial to the variegated and distinguished activities of those 77 years have not had much luck. A bust placed in the Public Gardens at Port Louis in 1898 was destroyed in a hurricane in 1924; it was replaced by a better and more durable version in 1928. The due celebration of his centenary was, of course, prevented by the war, and it is only now that his devoted admirer, Dr. F. A. Rouget, President of the Medical Society of Mauritius, has been able to issue a memorial biography which, as is proper on such occasions, deals as much with his personality as with his scientific work. His father disappeared at sea when he was a child and he grew up in meagre circumstances, spending some years as an assistant in a general store. Friends then found funds for him to go to Paris where he arrived at the age of 21, purposing a career in literature. He

soon had to turn to something more solid and graduated in medicine in 1846, sinking himself then and for some years afterwards in a passionate experimental inquiry into the functions of the spinal cord. The restoration of the monarchy in 1851 gave him a reason—or at any rate an excuse—to embark for America, without knowing a word of English but reckoning that he could pick up enough of the language on the voyage. He made a precarious livelihood, partly as a physiologist and partly as a midwife, and in a couple of years was back in Paris working at physiology. His fame grew, he founded the *Journal de Physiologie* in 1858, and in the same year was invited to come to London to lecture at the Royal College of Surgeons on the central nervous system. Here he stayed five years, became a member of the staff of the National Hospital, a Fellow of the Royal Society, and in 1861 their Croonian lecturer. But in 1863 he was off to America again and became professor of physiology at Harvard; from 1868–73 he taught in the École de Médecine in Paris, and then followed some miserable years of wandering, partly spent in practice in New York. Finally, in 1878, he went back to Paris to succeed Claude Bernard as professor of experimental medicine, in the Collège de France, and he died in that capacity. He was married three times and his grandson, Dr. Charles Edward McCausland, is in practice at Eyam, in Derbyshire. Throughout this troubled life he was continually obsessed with a fiery passion for work—experimental, clinical, and imaginative. He went to bed at 10 and got up at 4, and left behind him more than 500 papers. All that he did was certainly not first-rate, but in at least two lines he was a distinguished pioneer. His early work on the conducting tracts in the spinal cord threw a new light on the working of the nervous system, and his knowledge of neurology in general was exceptional and always progressive. In later life he became well known to the general public for his advocacy of the use of testicular extracts for rejuvenation. And whatever the truth or propriety of his contention, his work is conspicuous as one of the earliest attempts to apply internal secretions to practical medicine. We heartily sympathise with Dr. Rouget in thinking that the memory of a great man should be recalled for our edification, and the book which he has put together is most appropriate for the occasion.

TESTICULAR GRAFTS.

DIFFICULTY in obtaining an active extract of the testis has given a stimulus to the use of grafts, and for the last ten years, and more particularly as the result of Voronoff's work, testicular grafting has been extensively employed in various clinical conditions supposed to be due to a deficiency of the male hormone. The exponents of grafting have claimed from it good results, and undoubtedly in many cases the patient appears to have benefited from his operation. However, in the absence of reliable objective signs of improvement and with the ever-present possibility that the patient's improvement may be the result of suggestion, no certain proof has ever been furnished that testicular grafting is effective. Even where reliance has been placed on such criteria as basal metabolism rates, sugar toleration tests, blood examinations, and alterations in body-weight and blood pressure, the clinician can never be certain that the changes noted are the direct result of the implantation of the graft. It is, therefore, not surprising that the laboratory worker has looked with scepticism on the proofs the clinician offers of the efficacy of his grafts. In the *Journal of the American Medical Association* (June 4th, 1930) Dr. Carl R. Moore (Chicago) makes a critical examination of the claims made, and expresses the opinion that there is no evidence that either homo- or hetero-grafts have had any effect whatever. Dr. Moore is well known in this country for his work on the male hormone, and particularly for the laboratory methods he has elaborated for detecting its presence in animals. He has shown that in the rat castration produces within four days involutionary changes in the secretory cells of the prostate and seminal vesicles, and that these changes may be prevented by the use of an effective hormone preparation. In guinea-pigs he has judged by changes in ejaculation reflex produced by electrical stimulation of the genitals, and alterations in the viability of the spermatozoa found within the epididymis. By means of these and of similar tests he claims that it is possible to prove whether male hormone is or is not being produced by a transplanted testis within a week of its being placed in position. In order to test the efficacy of testicular grafting he has carried out auto-transplantations in both the rat and the guinea-pig, and has found that his tests invariably give negative results. In other words, the animal with a transplant differs in no way from a castrated one. It is only fair to add, however, that the transplantation has been carried out in a way that makes it almost certain that the transplants are not viable, and Dr. Moore claims only that his experiments show the futility of any idea that a graft during the process of absorption liberates an effective amount of hormone. He does not assert that his experiments disprove the action of a graft that has taken, but contents himself with pointing out that in all probability only a few transplants become viable.

The explanation of the inefficacy of non-viable transplant lies in the fact that little or no storage of hormone occurs in testicular tissue. In this respect the testis is unlike the thyroid, in which a considerable storage occurs. This fact is correlated with the observations that the male hormone is excreted in the urine in considerable quantities. Indeed, urine provides the most favourable material from which male hormone can be prepared. Dr. Moore's contribution to the subject of testicular transplants is particularly valuable in view of the extravagant claims that have been made by enthusiasts whose industry in grafting exceeds their critical faculty in assessing results. He furnishes an example of the valuable assistance that the laboratory worker can give to the surgeon by submitting clinical opinions to the more exacting tests.

INTRAVENOUS PYELOGRAPHY.

SINCE an annotation on excretion urography appeared in THE LANCET six months ago,[1] uroselectan has passed into general use, and it is now possible to speak with greater certainty of the value and of the limitations of the method. Sufficient evidence has accumulated to justify the introduction of intravenous urography, which furnishes a valuable addition to our means of diagnosis in urinary conditions. It has in no way become a general substitute for the older technique of retrograde pyelography, but provides an easy means of outlining the urinary tract in those cases where the employment of the

[1] THE LANCET, 1930, i., 702.

older method would be difficult or inconvenient. Moreover, the fact that the rapidity of excretion of the drug depends on the efficiency of the kidney gives to intravenous pyelography an additional advantage, for it affords some idea of the comparative functional value of each kidney. The quicker and the more densely the shadow appears, and the more rapidly it fades, the greater is the functional value of the kidney concerned. If no shadow or only a very faint one appears on one side it is practically certain that that kidney is the site of a severe pathological lesion. In the experience of Mr. R. Ogier Ward and of Mr. Kenneth Heritage[2] the ability to secrete uroselectan, in sufficient quantities to be detected radiologically, seems to be retained although the organ may be working under great difficulties, and in those cases in which the pelvic shadow is absent from all radiograms the organ has been subsequently discovered to be so disorganised as to be functionless. The fact that even a badly embarrassed kidney retains the power of excreting uroselectan allows the drug to be used in all except cases of very definitely impaired renal function. Provided the correct technique has been carefully followed, the risks of intravenous pyelography appear to be very small. As a rule, no reaction follows its use, and even when symptoms are noted they are no greater and probably less than those that may result from the older methods. Certain accidents have been reported, but these have all been due either to faulty technique or to the use of the method in unsuitable cases. Heritage and Ogier Ward had the opportunity of submitting a kidney to microscopic inspection a short time after the employment of uroselectan, and Dr. H. F. Brewer could find no indication of renal damage. In our last issue Mr. R. V. Cooke maintained that "kidney function must be very bad before the test becomes dangerous."

When we compare the radiographic results of uroselectan with those obtained by retrograde pyelography it is obvious that the shadows lack the definition and clearness of those obtained by the older methods. Indeed, for the detection of minor deformities of the calices and of the slight alterations in the pelvic shadow produced, say, by a renal papilloma, it is generally necessary to have recourse to retrograde pyelography. Especially is this necessary when owing to functional impairment the excretion of the drug is diminished, although here the concentration of the drug in the kidney and ureter may be temporarily increased by partial occlusion of the ureter. In order to achieve this partial occlusion it is only necessary to interfere with ureteric peristalsis by applying compression at the level of the sacro-iliac joints. The chief value of uroselectan, however, is where cystoscopy and ureteric catheterisation is difficult or impossible, for example, in cases of prostatic obstruction or stricture, cases of severe cystitis and particularly of tuberculous cystitis (where cystoscopy is excruciatingly painful and distension of the bladder impossible), cases of severe hæmaturia, and where the patient is a child. Nervous patients who submit badly to the searching examination of the urinary tract that may be necessary for the establishment of an exact diagnosis will also appreciate its advantages, while most authorities consider it the method of choice when bilateral pyelography is indicated. Prof. Arthur Binz, Prof. A. von Lichtenberg, and Dr. M. Swick have undoubtedly provided clinical medicine with a means of placing urological diagnosis on an even more accurate basis than was previously possible.

[2] THE LANCET, July 19th, p. 132.

CALCIUM REQUIREMENTS IN THE HUMAN SUBJECT.

WHILE mineral metabolism is receiving much attention from physiologists nowadays, their observations have mostly been carried out on laboratory animals. These animals are convenient in that they can be kept under control as regards diet and the collection of excreta, but must be supplemented by controlled observations on human beings before conclusions affecting man can be drawn. Dr. Francis C. Kelly and Dr. John M. Henderson have conducted a series of experiments[1] on the calcium metabolism of adult male inmates of the prison at Nairobi. The subjects were all receiving the basal diet usually supplied to the prisoners, and during these observations they performed their regular routine duties. The standard diet was composed of cereals, beef, potatoes, ghee, salt, and lemons. Analysis showed it to have a sufficiency of proteins, carbohydrates, and fat; and the daily ration yielded 3450 calories. The calcium intake, however, was found to be only 0·30 g. per diem, and the phosphorus 2·36 g. It was decided to observe the effect of adding to the daily basal diet a supplement, composed of a mineral mixture which approximated both qualitatively and quantitatively to the ash content of one pint of milk. Some of the subjects received cod-liver oil in addition to this mixture, and others were given only the cod-liver oil supplement. The period of observation extended over six months, and all the subjects, including those in the control group, showed an increase in body-weight during this period. This increase, however, was most marked in those subjects receiving the mineral mixture with cod-liver oil, next in those receiving cod-liver oil, and least in the group receiving only the mineral supplement. All these groups showed a greater increase than did the controls. There was further noted a difference in the retention of the gain in body-weight after the withdrawal of the supplements. Those subjects who had received cod-liver oil with or without the mineral addition retained longest their increase in weight. Concurrently it was noted that a rise occurred in the calcium content of the blood in all subjects put on a supplemental diet; and although the blood calcium fell after the withdrawal of the supplement, on the average it remained higher than the previous normal. There appeared to be a certain degree of correlation between the increase of body-weight and the blood calcium level. These improvements could not be due to the cod-liver oil per se, because they were obtained also in the subjects who received only the mineral mixture addition. Evidence was also obtained which suggested that the presence of intestinal parasites may have an effect in lowering the calcium content of the blood.

Discussing these results the authors conclude that the calcium is one of the most important constituents in the mineral mixture. In all the 42 subjects the initial level of the blood calcium, although within physiological limits, was low. This could be accounted for by the poor calcium content of the basal diet, only 0·30 g. per diem. Further, in a few tentative experiments, it was shown that five out of eight subjects on the basal diet, either with or without cod-liver oil, were in a negative calcium balance, whereas when the mineral mixture was added seven out of eight showed a positive calcium balance. When the elimination of calcium salts in the urine

[1] Collected Papers of the Rowett Research Institute. Vol. II. Edited by John Boyd Orr, M.D., D.Sc. Aberdeen: Edmund and Spark. 1930. Pp. 588. 21s.

and fæces exceeds the amount taken in the food, the calcium balance is negative. When the output is less than the intake, calcium is retained in the body and the calcium balance is referred to as positive.

These observations on calcium balance were further pursued on growing boys and yielded interesting results. The boys were receiving a diet similar to that supplied to the adults. Five subjects were examined, and four of them were found to have a negative calcium balance. Adding cod-liver oil by itself had no effect. The daily calcium requirement of these boys was found to be 0·43 g., and, if additional mineral mixture was supplied, 50 per cent. of the excess calcium was retained. When, however, the calcium was supplied in the form of milk, more than 70 per cent. of the excess calcium over basal requirements was retained. The authors conclude that when an individual is living on a low calcium diet the amount of calcium in the blood may not necessarily reflect this deficiency; further, that under these conditions the addition of more calcium to the diet is followed by a rise in the calcium content of the blood, and that this rise is not transitory. We note with regret that Dr. Henderson died at Nairobi shortly after this work was completed.

SMOKE ABATEMENT.

THE second annual conference of the National Smoke Abatement Society was held at Leicester last week-end. Dr. H. A. des Vœux, who presided, called attention to certain defects in drafting the Public Health (Smoke Abatement) Act, 1926, which greatly diminished its useful application. Definite progress has been made during the past year in ways which must in the aggregate lead to appreciably cleaner air, in spite of the present depression which has led the shallow-minded to associate clean air with empty factories rather than with efficient factories, and has made plausible the mischievous slogan, "What we want is more smoke." At a largely attended public meeting on Friday evening Dr. R. Veitch Clark, medical officer of health for Manchester, set out once again the social and economic objections to a smoke-polluted atmosphere. Hygiene has found a new ally in aeronautics, for two experts from the Air Ministry voiced the difficulties of piloting aircraft across smoke-laden industrial areas. An airman approaching a large industrial city frequently sees nothing but a grey smudge of smoke. The expansion of air travel thus makes it necessary to strike at the smoke nuisance from still another angle. Miss Margaret Fishenden, D.Sc., who read a paper on Sunday morning, is one of the leading fuel experts in the country, and she has done much research upon methods of domestic heating. For domestic purposes the main alternatives to raw coal are gas, coke, or other carbonised fuel, and electricity. The gas industry has striven systematically towards improved methods of manufacture, distribution, and use, and in consequence the yield of gas per ton of coal carbonised has steadily increased, the price per therm has fallen, and the efficiency of gas appliances has improved. At the same time, every effort is being made to establish a more general and cheaper supply of electricity in Great Britain. The Central Electricity Board, under powers conferred by the 1926 (Electricity) Supply Act, and working in cöoperation with the established electricity supply industry, is gradually constructing a network of lines connecting the main generating stations and bringing a wider area under supply from efficient plant. Many small out-of-date plants are being shut down, and it is hoped to decrease substantially the average price of electricity production. Notwithstanding these advances, the total domestic consumption of coal remains steady, although the consumption per head is slowly decreasing. It is generally admitted that for inclusive household purposes either gas or electricity, or any combination of the two, would compare unfavourably with coal on the basis of running costs, and that to assist a rapid improvement in the smoke nuisance some cheap solid smokeless fuel is called for. Hence the attention paid during recent years to the possibilities of low-temperature carbonisation. The products vary widely according to the manner of carbonisation, but in most cases the primary aim is either to produce an improved smokeless fuel or to deprive the coal of the greatest possible quantity of tar and spirit before using it for ordinary furnace purposes. In Great Britain the production of a smokeless free-burning solid fuel for use in domestic grates and in the smaller industrial plant is the more important, but unfortunately the externally heated retorts, which are most suitable for this purpose, are relatively expensive to erect and work, and, according to estimates made by Dr. C. H. Lander, are scarcely likely to pay unless the coke can be sold at a sufficiently high price to cover the cost of the coal treated. Since only about 14 cwt. or 15 cwt. of coke is produced per ton of coal, this means that the price of the coke would have to be 30 or 40 per cent. above that of the coal. The demand for low-temperature coke at a price about equal to that of the best household coal still exceeds the supply, but comparatively little is yet available, and there is still doubt whether it could be produced economically on a scale at all commensurate with the present national requirements even at this price. Further, if any considerable proportion of the 40 million tons of raw coal now used for household purposes were to be replaced by the product of low-temperature carbonisation, it might be expected that the price of coal suitable for treatment would rise, while the price of domestic coal would fall. From the many estimates that have been made it seems probable that the damage directly due to smoke from domestic fires averages at least 10*s*. per ton of coal burned, while if the coke from low-temperature carbonisation could command 10*s*. a ton more than household coal, some of the processes already developed could probably be worked at a satisfactory profit. We can only hope for the best, Dr. Fishenden concluded, in regard to low-temperature coke production, but in the meantime where raw coal is used it should be burned with as little smoke as possible.

BY special invitation of the Council of the Royal Society of Medicine, Dr. Chevalier Jackson, of Philadelphia, will deliver a lecture on Suppurative Diseases of Lung, at 1, Wimpole-street, W., on Tuesday, Oct. 14th, at 8.30 P.M. Dr. Jackson will illustrate his lecture by cinematograph films, slides, and chalk drawings executed while he speaks.

Summer Time, which commenced in Great Britain, Ireland, the Channel Islands, and the Isle of Man on April 13th, will cease on Sunday next, Oct. 5th, at 3 A.M., when the clock will be put back to 2 A.M. The hour 2–3 A.M. Summer time will thus be followed by the hour 2–3 A.M. Greenwich time. As France and Belgium make the change at the same week-end the cross-channel traveller will not need to readjust his watch.

CLINICAL INTERPRETATION OF AIDS TO DIAGNOSIS

A Series of Special Articles, contributed by invitation.

LXXXIV.

RADIOGRAMS OF THE CHEST.

(WITH ILLUSTRATIVE PLATES.)

PART I.*

NORMAL AND INFECTIVE CONDITIONS.

So variable is the anatomical structure of the lung that it becomes exceedingly difficult to define with any accuracy the normal lung. No two lungs are identical in regard to the size and arrangement of the pulmonary vessels, for instance, or in the amount of interstitial tissue, while age, occupation, and even the technique adopted in obtaining the radiogram have all to be taken into consideration; in other words, a sixth sense has to be acquired, and this can come only by close attention and experience. It ought to be appreciated that many adventitious shadows seen in the lung fields are not of necessity evidence of a pathological state but must be regarded as falling well within the limits of the normal.

The Normal Adult Chest.

The lungs, as seen in a radiogram, occupy the whole of the space within the bony thorax, limited below by the diaphragm, and separated by the mediastinum and heart. The trellis-like arrangement of the ribs—seen better with the tube below or behind, and the film on the anterior thoracic wall—is easily recognised. The lung, composed of air cells and some interstitial tissue (the latter varying in amount and more obvious in the presence of emphysema), is traversed by the bronchi, lymphatic vessels, and blood-vessels. Since in the ordinary radiogram the observer is, so to speak, looking at a series of superimposed sections of lung tissue, it is obvious that the linear markings caused by these sections must be more pronounced at the region of the hilum, or in situations where the bronchial tubes and blood-vessels are the largest, for example, from the root towards the apex and base; consequently near the periphery the lung assumes a more or less marbled appearance, as Wessler and Jaches aptly describe it (fig. 1 A.). It is also quite obvious that congestion, or the conioses, or even dusty occupations will tend to exaggerate these linear markings.

The hilum of the lung, composed as it is of bronchi, blood-vessels, lymphatic glands, and a varying amount of connective tissue, varies widely in size and shape; probably, in the adult at any rate, it never represents an anatomically normal condition, and yet clinically it may be quite normal. The dust and fog of our large cities, the effect produced by certain exanthemata, such as measles and whooping-cough, and of bronchitis, the response of the lymphatic glands to an early tuberculous involvement, all will leave their mark upon the lung root. In the rarely seen normal hilum (figs. 1 A. and 1 B.) the shadow is comparatively small, showing some linear markings only, which are probably pleuro-pericardial folds, and bronchial tubes which appear as small cavity-like rings as they are passing backwards, or as fine double-outlined cylinders. The lymphatic glands are not, as a rule, seen as independent shadows unless they are the subject of disease. There may be definite hyperplasia and fibrous tissue deposit, or at a later stage the deposit of calcium salts. The greater the deposit of calcium the denser will become the shadow of a bronchial gland and the more discrete (see fig. 1 C.). In the vast majority of cases, however, these shadows have no pathological significance, and do not justify the importance that has been attached to them by some observers.

Pathological Conditions of the Lung.

Possibly in no other branch of radiology is there greater difficulty than in the interpretation of radiograms illustrating disease of the lung. The attempt to dissect a radiogram and to regard all adventitious shadows as pathological has led to much distrust of radiology and to many heresies, of which the chief are "peribronchial phthisis" and "hilum tuberculosis." Many men escaped military service during the great war on the doubtful diagnosis of "peribronchial phthisis"; it is true that these men were mostly living unhealthy lives in the slums of our great cities, but none of them had symptoms nor were their activities interfered with.

Radiography at a distance of 2 metres, or perhaps 1·5 metres, is to-day no longer a luxury but a vital necessity for accurate diagnosis, and apparatus for this purpose is on the market. Since in many chest diseases it is necessary to examine the patient more than once it is well to be able to repeat every radiogram under precisely similar conditions. These can be secured by the simple expedient of making use of a standard position for the patient, the film, and the axial beam of the rays. The tube can be placed beneath the couch with a plumb-bob attachment which gives a fixed point, which may be, for instance, in the mid-sternal line at the level of the third costal cartilage.

PULMONARY TUBERCULOSIS.

It may be assumed that pulmonary tuberculosis starts as an infiltration of the lung parenchyma. To this there are exceptions but the broad principle may stand. The most common situation for the earliest infiltration (in the adult at any rate) is in the upper zone of the lung immediately below and just external to the mid-line of the clavicle. In a doubtful case the evidence upon which the radiologist is justified in the diagnosis of pulmonary tuberculosis is the presence of fine stippling or mottling of the lung parenchyma itself (fig. 11.). If such mottling be found and there is any clinical evidence to back it, even though physical signs are not actually present, the diagnosis can be made definitely. If, on the other hand, there is clinical evidence, or even a suspicion of symptoms that the patient has pulmonary tuberculosis, and no mottling of the lung parenchyma is found, then the patient should be under suspicion and a subsequent examination should be made. X ray examinations, made at a later stage, which are consistently negative over a period of about five months may be taken as conclusive proof that pulmonary tuberculosis is not present. No mere heaviness of the hilum shadow, no exaggeration of the linear striation of the lung is sufficient to justify the diagnosis from the radiological standpoint.

Shadows at the Roots of the Lungs.—The lung root is formed of bronchial tubes, blood-vessels, lymph ducts, areolar and interstitial tissue, and the bronchial glands, some 12 in number, which are distributed around the bifurcation of the trachea. The latter drain the lymphatics of the lungs and pleura. Most

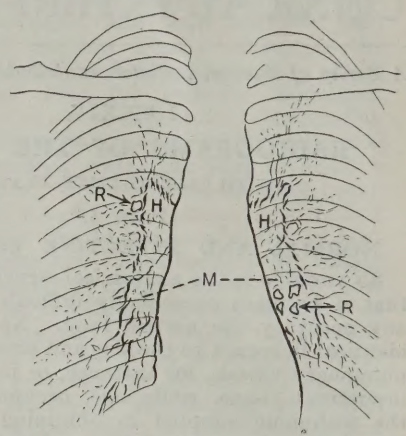
*Part II., New Growths of the Lung, will appear next week.

authorities believe the initial lesion of pulmonary tuberculosis to be in the lung parenchyma, such invasion being rapidly followed by reaction in the lymph nodes. It is a significant fact that the reaction of the lymph glands may be quite disproportionate in size to the initial lesion in the lung, and that the lymphatic glands thus becomes the predominant feature of the picture. In other cases there may be considerable pulmonary disease with very little enlargement of the tracheobronchial glands. It is important to interpret the shadows found in the hilum correctly and not to confuse them with the typical glandular shadows of lymphadenoma, for instance. (See Part III. of this article.) As has already been stated, heavy root shadows are common in city dwellers, and must be distinguished from enlarged bronchial glands. In the early stage the soft swelling of the gland cannot easily be differentiated from the surrounding tissues; in tuberculosis there are frequently calcareous deposits which cause the gland to stand out in marked contrast. As Wessler and Jaches justly remarked when writing of the significance of enlarged root shadows, "To regard these shadows as evidence of involvement of the lung root in a tuberculous infiltration is fatal to a rational interpretation of the plates; a large percentage of mankind would then be pronounced clinically tuberculous and the Rontgen diagnosis would be reduced to an absurdity." The infiltration of pulmonary tuberculosis may and frequently does undergo fibrous changes, leaving only a mass of scar tissue which persists and may be found post mortem.

Fibroid Phthisis.—Where the process of healing and repair are taking place the resulting scar tissue tends to contract, carrying with it the heart and the mediastinal contents (see fig. VI.). If at a later period further infiltration takes place in the other lung it is frequently found to be in the more central part of the lung, often far out towards the periphery. The same phenomenon—namely, central invasion—is sometimes met with in the other lung if infection arises after a therapeutic collapse of the more affected lung.

Cavities.—If the initial dosage has been heavy and the resistance poor the area of consolidation may undergo central necrosis with liquefaction and cavity formation. In the early stages a cavity is small, but it may coalesce with other cavities until finally, through ulceration of the interstitial tissues, a large smooth-walled cavity is seen (fig. III.). In some cases this cavity may closely resemble a pneumothorax; a cavity more frequently has a thickened and somewhat crenated edge, whereas in pneumothorax the lung edge is very sharply defined (see figs. IV. and V.). In the past a difficulty has been made of the differentiation between a cavity and a so-called "annular shadow." Many theories have been evolved concerning these "annular shadows," but the modern view is that most, if not all, of them are, in fact, cavities. At any rate, since they present themselves as part of the picture of pulmonary tuberculosis, it would appear to be the duty of the clinician to regard them as cavities and to collapse the lung in which they occur if collapse is indicated on other grounds. An effusion in a cavity or in a pneumo-

DIAGRAM OF FIG. I A.



H = Hilum. M = Mass at hilum, consisting of bronchial tubes, blood-vessels, and lymphatic glands. R = Bronchi in cross-section.

LEGENDS TO ILLUSTRATIONS APPEARING ON SPECIAL PLATES.

I A. Normal lung. Note linear striation and marbled appearance of lung towards the periphery.

I B. Normal lungs, showing the shadow thrown by the breast which may lead to error in interpretation. The shadow each side is defined by a curved line immediately above the diaphragm on either side and convex to it, leaving an area between itself and the diaphragm of more translucent lung tissue.

I C. Old healed tuberculosis involving bronchial glands, showing appearance of calcified glands at the root of the lung.

II. Pulmonary tuberculosis. Early infiltration in the upper part of right lung, and therefore lessened translucency. Note lessened expansion of right apex and fine stippling in infraclavicular region on the right side.

III. Large cavities at apices of both lungs. Right lung shows stippled shadows towards the base. The cavity at the left apex is partly masked by the strands of interstitial tissue. The lung below this cavity is hypertranslucent because of compensatory emphysema. The lower two-thirds of the right lung show the infiltration characteristic of tuberculosis.

IV. Large cavity in right lung. Distinguish this from fig. V. by irregular outline of the cavity and the massive infiltration of the other lung.

V. Spontaneous pneumothorax in right lung, which is very similar to cavity shown in fig. IV. but has sharply defined outline.

VI. Fibroid phthisis, showing marked contraction of the left lung; displacement of heart and mediastinum. Note infiltration in the central area of the right lung.

VII. Miliary tuberculosis, showing the fine punctate stippling of all zones.

VIII. Bronchiectasis; a case in which the only definite clinical evidence was hæmoptysis. The extreme base of the left lung is less translucent than in the normal chest.

IX. The same case as shown in fig. VIII. after injection (intratracheal) with lipiodol, in which the glove-like processes seen especially behind the diaphragm at the base are characteristic.

X. Silicosis. Note the fine stippling, which closely resembles that of miliary tuberculosis shown in fig. VII.

XI. Silicosis in which a broncho-pneumonic tuberculous process has been superadded.

XII. Pleurisy with effusion. Note curve (the Ellis curve) at the upper limit of the effusion, passing in a direction upwards and outwards towards the mid-line of the clavicle.

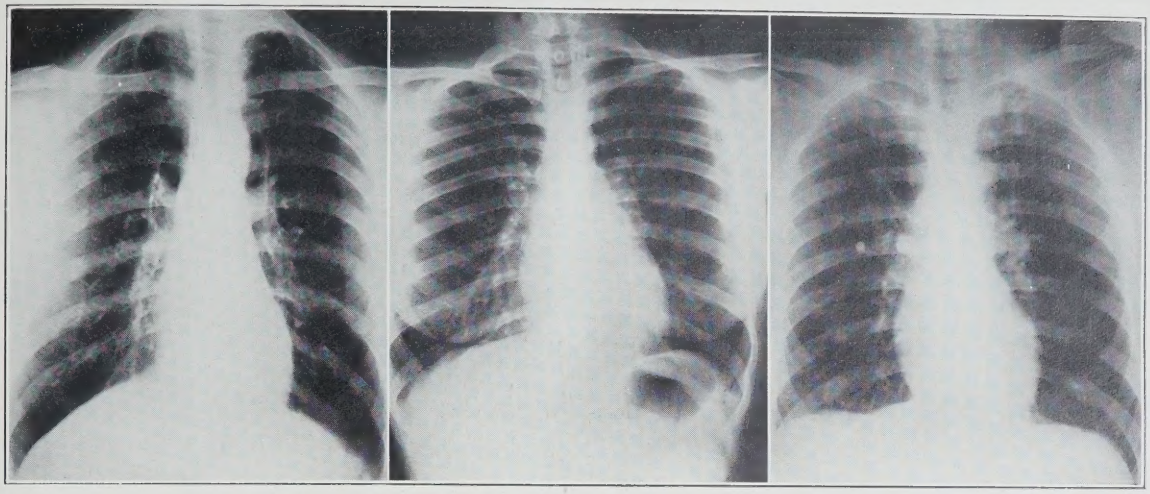
XIII. Pleurisy-encysted effusion in interlobar fissure. The heart, mediastinum, and trachea are displaced to the right side; on this side the lateral portion of the diaphragm is invisible. Passing from the diaphragm upwards in the axillary line there is an indefinite area which suggests encysted fluid. This area viewed in the oblique diameter (fig. XIV.) is seen to be connected with the interlobar fissure between the middle and lower lobes of the right lung. The dense opacity on the left side external to the chest wall is the shadow of the breast.

XIV. The same case taken in the lateral plane to clinch the diagnosis. Note the oblique line in the lower part of the lung space indicating the position of the encysted fluid.

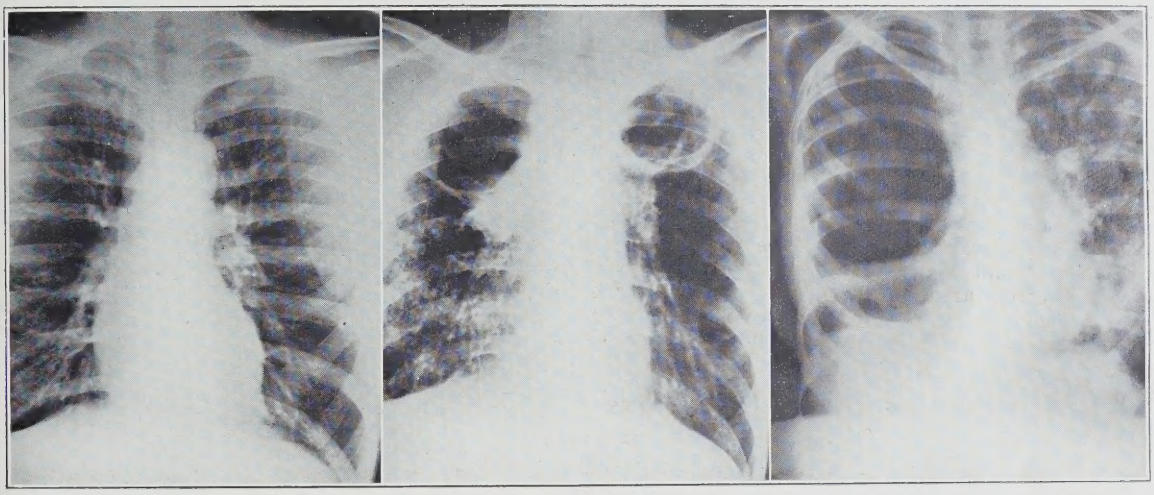
XV. Diaphragmatic pleurisy with effusion. On the left side there is reflex inhibition of the diaphragm, which is immobile. Above this there is a dense layer, conforming in contour to the diaphragm, which represents an encysted effusion. The triangular area of translucency below the diaphragm may represent the stomach or the splenic flexure.

XVI. The same case in the lateral plane. The diaphragm can be seen just overlying the translucent fundus of the stomach while posterior to it—i.e., towards the vertebral column—will be seen the fluid as it occupies the lower part of the pleural cavity.

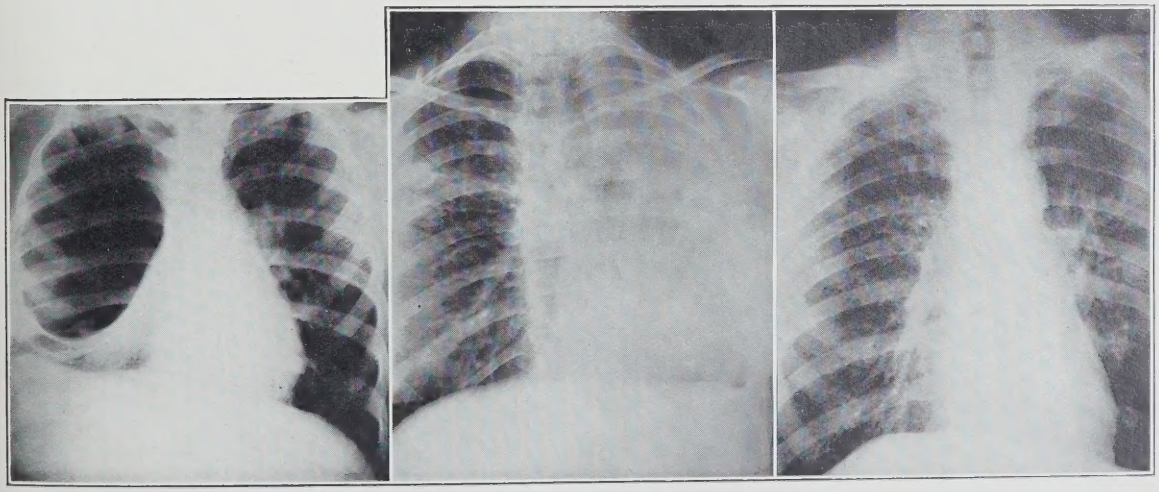
I A. I B. I C.



II. III. IV.

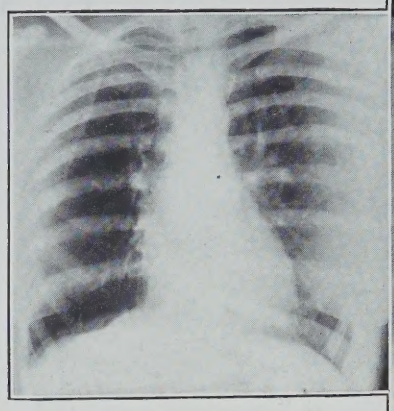


V. VI. VII.



DRS. BURRELL AND MELVILLE: INTERPRETATION OF RADIOGRAMS OF THE CHEST.

VIII.



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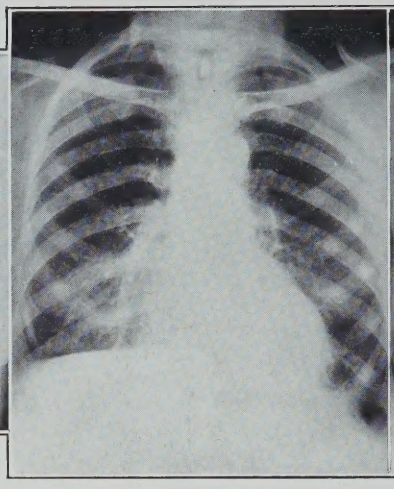

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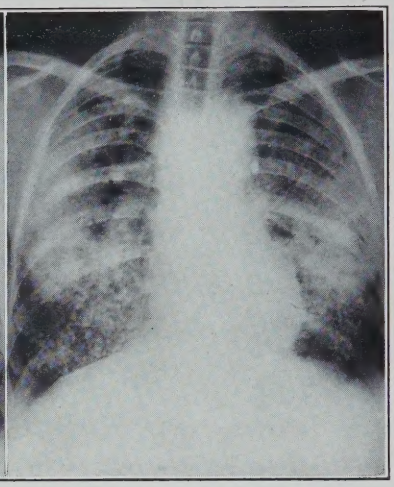

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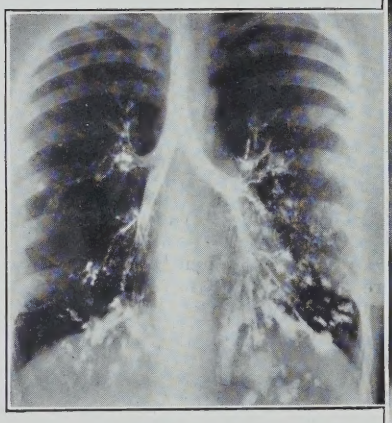

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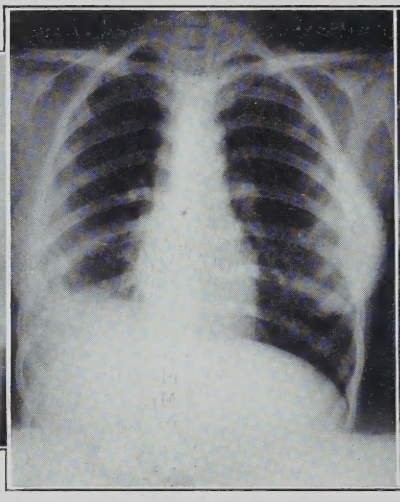

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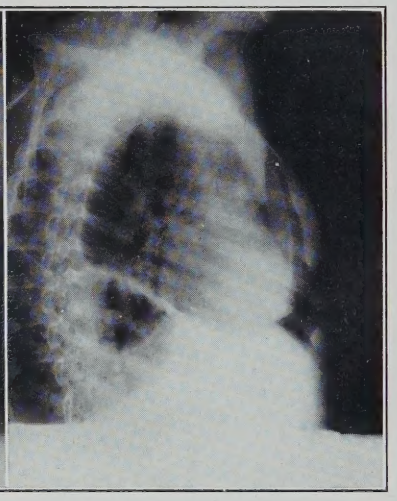

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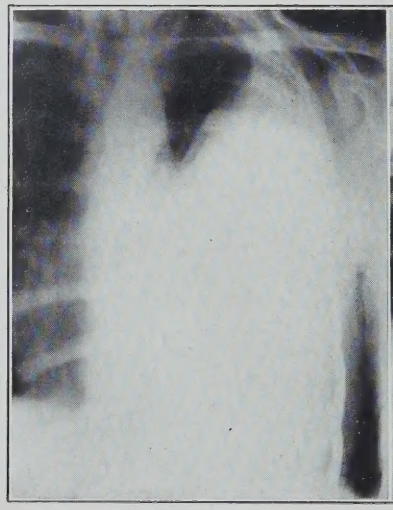

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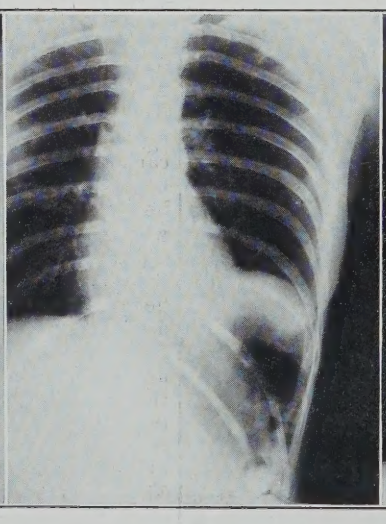
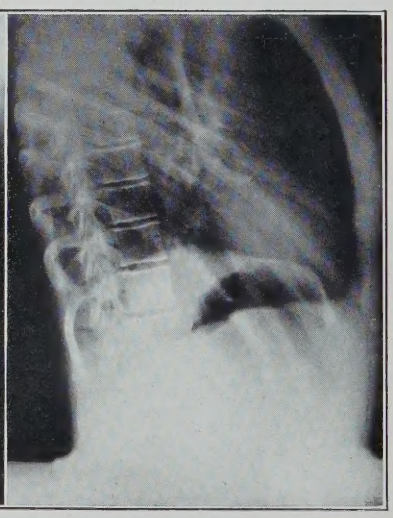


XVI.



thorax will be seen as a dense opacity, showing a fluid level which will obey the laws of gravity according to the position of the patient. In tuberculous broncho-pneumonia opacities can be seen scattered over the affected part of the lung, corresponding to the lobules involved. After hæmoptysis there are frequently signs only of bronchitis, but the presence of broncho-pneumonia can be detected on X ray examination.

Miliary tuberculosis presents a characteristic appearance, the lungs being studded over with opacities the size of small beads. This condition is extremely difficult to show in a reproduction of a radiogram, but an attempt has been made in fig. VII.

In chronic tuberculosis recent infiltration appears as a localised mottling, whereas older infiltrations have a linear appearance. The change from the soft stippled shadows to the harder and more linear opacities therefore indicates fibrosis, and may be taken as a sign of healing.

BRONCHIECTASIS.

The X ray appearances in a typical basal case are characteristic. There may be fixation or lessened excursion of the diaphragm on the affected side. If there is much fibrosis the heart and mediastinum are displaced towards the affected side, and on respiration there may be pendulum-like movement of the mediastinum towards the diseased side during inspiration and away from it during expiration. The film shows mainly fibrosis, and it may not be possible to see the actual dilatation of the bronchi without the injection of lipiodol. Sometimes the bronchi are seen filled with secretion, and later, after there has been much expectoration, they show as definitely dilated shadows with bud-like processes (sacculæ). The more common are "glove-finger" dilatations, and the intrapulmonary injection of lipiodol shows up in relief the characteristic picture. Of late, in some doubtful cases in which the only clinical evidence has been recurrent hæmoptysis and some physical signs of doubtful significance, the injection of lipiodol has cleared up the diagnosis (figs. VIII. and IX.).

PNEUMONOCONIOSIS.

Silica dust in some form is the essential irritant in the production of this disease. Thus gold-miners, metal workers who use sandstone wheels in their work, stone-masons, and workers in asbestos factories are the chief victims. An early, but according to observers in South Africa, not the earliest stage in the disease, the result of inhalation of silica dust, is a peculiar mottling of the lung, the earliest mottling being as fine as that of miliary tuberculosis (fig. X.). During this stage the normal linear striation of the lung appears to be obliterated and the whole lung, except the apices and at times the periphery, is finely mottled. This is followed by enlargement of the bronchial glands, and the lung then shows the linear streaking of fibrosis. If tuberculosis supervenes the areas of mottling tend to become conglomerate and hazy, the picture thereafter being that of pulmonary tuberculosis in one or other form, and frequently in the form of broncho-pneumonia (fig. XI.). The fine mottling of the lung parenchyma has to be differentiated from a similar infiltration in miliary tuberculosis and in carcinomatosis, in both of which the infection is carried from some focus elsewhere by the blood or lymph stream.

PLEURISY.

The X ray evidence of dry pleurisy is of no great value; there is invariably some reflex inhibition of the diaphragm on the affected side. When this is followed by effusion from whatever cause, the effusion is at first horizontal in position, the costophrenic angle being obliterated, and the dome of the diaphragm soon obscured. Later, often quite rapidly, the characteristic Ellis curve is seen (fig. XII.) with displacement of the heart and mediastinum to the opposite side. Radiographic evidence is most often requisitioned to determine either the amount of residual fluid after paracentesis, the condition of the underlying lung, or the cause of the effusion. It is, however, in encysted effusions that radiography can give the greatest help, especially in interlobar effusion. Encysted effusions are either superficial (apical, axillary, central, or basal) or interlobar (figs. XIII. and XIV.), or concealed either between the lung and the diaphragm (figs. XV. and XVI.).

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MEDICINE AND THE LAW.

A Schoolmistress's Neglect to Call in Doctor.

Mrs. Fearn, principal of Merevale High School, Bickley, Kent, was sentenced at the Central Criminal Court on Sept. 26th to 12 months' imprisonment in the second division for having neglected children between the ages of 5 and 9 years in a manner likely to cause them unnecessary suffering or injury to their health. In spite of statements by witnesses that the larder contained insufficient food, and that the premises were dirty, there was no specific allegation of neglect by way of starvation or want of cleanliness. The prosecution rested its case on Mrs. Fearn's omission to obtain medical assistance in due time or at all for various pupils at the school suffering from measles and ringworm. Prosecuting counsel submitted that the accused failed to notify the school doctor or the parents, minimised the seriousness of the children's condition, and neglected them to a degree that was criminal. An inspector of the N.S.P.C.C., who visited the school upon complaint of neglect in respect of a child who had died, said in evidence that Mrs. Fearn told him she owed the regular school medical attendant a bill for fees, and that was why she had not called him in. A practitioner who had attended a schoolgirl suffering from impetigo of the scalp said the child was in a neglected state and should have had medical attention earlier. Another practitioner, whose daughter was a boarder at the school, said that, when he visited her, he was asked to see three other children and a mistress who were all suffering from measles. One child had a temperature of over 101° F.; he thought she should have been seen by a doctor at least two days earlier; he told Mrs. Fearn the cases required careful nursing, and that she required extra help; he had no knowledge that extra help was obtained. Some time later an inspector of the N.S.P.C.C. asked him to examine the children in the school. He found them suffering from ringworm, which he estimated had existed from three weeks to three or four months; it was obvious to anyone that something was wrong with the children. The case for the accused was that she did not know or suspect that the children had measles; she thought

the child who died had a cold, and she did not wish to alarm the patients unnecessarily; it was urged that she had committed an error of judgment rather than a crime. The jury, after deliberating for an hour, found Mrs. Fearn guilty in respect of six children, but not guilty in respect of two others. A schoolmistress, as the Recorder explained to the jury, puts herself in the position of a parent, and is responsible for taking every reasonable and proper precaution for the pupils' health. In charges of neglect the test to apply is whether or no the conduct is that of a reasonable parent or a person who put herself in the position of a reasonable parent. Thus the issue was eminently one for decision by a jury.

There was some question whether measles was a notifiable disease in the district. Asked by the Recorder, Mrs. Fearn said she believed the earlier cases were notified; she did not know if the practitioner who attended the later cases notified them. Recalled by the Recorder, the latter practitioner said he understood cases of measles were not notifiable at Bickley; during the last ten years medical opinion had, he said, taken a more serious view of measles than formerly. The accused's hesitation to call in a doctor was no doubt in part explained—though not in any way justified—by the fact that parents do not always recoup to a school the fees which the school has incurred on parents' behalf for medical attendance. The omission of a schoolmaster or schoolmistress to notify parents of a child's ill-health is perhaps a breach of humanity rather than a breach of the criminal law. Notification of the parent, however, does in some degree pass back to the parent a part of the responsibility which the parent has temporarily delegated to the principal of the school. The schoolmistress, being the person primarily responsible in place of the parent, had to exercise a discretion whether or not to call in a medical practitioner; the jury has found that she criminally failed in the exercise of this discretion. Had she informed the parents, the parents could have visited the children and exercised an independent discretion as to obtaining the advice of their own medical attendant. Parents in general may often be inconveniently fussy over the health of their children; alternatively, when faced with a bill for medical attendance, they may minimise the need of medical services when the illness is safely over. This difficulty is one of the known risks of conducting a school; there is no question that in the case under discussion Mrs. Fearn should have notified them.

Censure by Coroner's Jury.

At an inquest held at Bristol in September it appeared that a man who had fallen from the top of a 28-feet ladder was admitted to the casualty ward of the Royal Infirmary at 5.30 P.M., and sent home in an ambulance at 8 P.M. He was readmitted to the infirmary a week later and died the following day. Death was due to pneumonia following injury of a lung by a fractured rib. The man had a fractured rib on the right side, three fractured ribs on the left side (one of which penetrated the lung), and a double fracture of the right leg. The house surgeon at the Royal Infirmary, answering questions addressed him by a solicitor on behalf of the man's employer at the inquest, said that the doctor who examined the patient left a note saying that he was suffering from bruising of the right leg and of the ribs. The witness agreed that this doctor (who had since left the infirmary through reappointments and who was not present at the inquest) had failed to notice the fractures, but said it was possible not to recognise fractures. The wife of the deceased, giving evidence of subsequent examination and treatment of her husband by his own medical attendant, said that the latter told her that, as her husband was so badly bruised and swollen, he could not find out what fractures there were. The coroner's jury censured the unnamed practitioner who had first examined the patient at the infirmary. "We are of the opinion," they said, "that the doctor did not take sufficient care in the examination." The coroner remarked that he did not know whether one should have been able to detect the fracture of the ribs or not; the question of the fractured leg seemed less explicable. As the coroner observed, it would have been more satisfactory if the inquest had been attended by the practitioner who first examined the patient in the casualty ward, and also by the deceased's private doctor. One may agree that, in view of the publicity which invariably attends any censure of a member of the medical profession, it is unfortunate that the latitude allowed to a coroner's jury encourages the adding of riders attacking the conduct of persons who are not before the tribunal. However strong the prima facie case of neglect, there may be circumstances which would shed a very different light upon the case if brought to the notice of a court where the practitioner's conduct is a direct issue.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments are notified: Surg. Comdr. W. P. Vicary, lent to New Zealand Division for about three years.

Surg. Lt.-Comdr. G. Kirker to *Titania*.

Surg. Lt. C. H. Egan transferred to Permanent List.

ROYAL NAVAL VOLUNTEER RESERVE.

Proby. Surg. Sub-Lt. R. M. Marshall to be Surg. Sub-Lt.

Proby. Surg. Lt. (D) R. Symmons to be Surg. Lt. (D).

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. H. B. Kelly, from R.A.M.C., to be Col.

Maj. and temp. Lt.-Col. E. D. Caddell to be Lt.-Col, vice Lt.-Col. H. B. Kelly, promoted.

Maj. H. L. Howell to be temp. Lt.-Col.

Lt. J. E. Swyer to be Capt.

ARMY DENTAL CORPS.

Lt.-Col. W. T. Finlayson retires on retd. pay, and is re-empld.

Maj. W. M. Ferguson to be Lt.-Col., vice Lt.-Col. W. T. Finlayson, to retd. pay.

Capts. J. McCurdy and P. P. Hogan to be Majs.

ARMY RESERVE OF OFFICERS.

Maj. R. N. Woodley, having attained the age-limit of liability to recall, ceases to belong to the Res. of Off.

Lt. R. A. M. Scott to be Capt.

TERRITORIAL ARMY.

Lt. D. J. MacMyn to be Capt.

Lt. H. Broadbent relinquishes his commn. on account of ill-health.

T. T. P. Murphy to be Lt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Lt.-Col. G. H. R. Gibson, from Active List, to be Lt.-Col.

Maj. H. A. B. Whitelocke, from Active List, to be Maj.

ROYAL AIR FORCE.

Wing Commander H. M. S. Turner is placed on the retd. list.

STAINES COTTAGE HOSPITAL.—The men's ward of this hospital has been ceremonially named after Sir Joseph Skevington, in recognition of his work as its honorary surgeon. On the same occasion portable X ray apparatus was presented by the Staines Bonfire Society, which has undertaken to provide a massage room at a cost of £600.

OPENING OF THE MEDICAL SCHOOLS

A NUMBER of the medical schools have opened their winter sessions during the present week. The following are extracts from inaugural addresses delivered at St. George's, Middlesex, the Royal Free, and Westminster Hospitals, and at the School of Pharmacy of the Pharmaceutical Society.

MIDDLESEX HOSPITAL.

ERIC PEARCE GOULD, M.Ch., F.R.C.S.,
SURGEON TO OUT-PATIENTS.

THE opening of this, the ninety-sixth winter session of the Medical School, coincides with the completion of the demolition of the remainder of the old hospital building. To newcomers this passing of the old building means no more than another stage in the big task of building the new hospital of which they have heard so much. But to those of us who have known the old hospital for years past, and especially those who in one capacity or another have been privileged to work in it, and in doing so have grown to love the sombre yet friendly frontage, the well-worn stairs, and the old familiar wards, their gradual disintegration into dust and rubble has meant more than this.

On reflection, I blame myself not so much for sentimental regrets as for the real mistake of ever looking upon such an institution as something static and fixed. And so I would have you look back just a few years to see what the hospital and school were like then, to contrast what we find with the present state of both, and consider for a moment their future.

In 1896—the year which marks the beginning of my own conscious knowledge of and interest in Middlesex—negotiations between the school and hospital were brought to a happy termination, and a fusion of the two parts into one effected. In the same year the hospital was congratulating itself upon the completion and opening of the Clacton Convalescent Home, and plans were already passed for a cancer wing to accommodate 38 cancer patients, thus freeing beds in the hospital itself devoted to these cases since the foundation of the cancer charity 96 years earlier. Shortly before—and here I quote from the report of that year—"a new and more spacious operating theatre was erected on the most approved principles. This building comprises a large theatre capable of accommodating 130 students . . . with rooms for the administration of anæsthetics and the recovery of patients, all very effectively lit by electric light and ventilated by a special apparatus in the basement." Whilst, to quote again from the same report, "to keep pace with the latest developments of medical science, a costly apparatus for photography by Röntgen rays has been provided." I can well believe that there were many connected with the hospital who in that year felt that finality in its development was as good as reached.

But let us contrast the present state of affairs with such conditions in 1896. Take the school first. The old lecture theatre still stands, the library block on the east is little changed, and much of the buildings up the staircase to the west are still the same. But the old museum, an untidy, gloomy, echoing cavern, has been replaced by the lofty, well-lighted, busy Bland-Sutton Institute of Pathology. A new department of biology tops the reconstructed department of physiology, while across the street the Courtauld Institute of Biochemistry adds its towering height to the whole group of buildings. With the exception of the chapel the whole of the hospital fabric has been built since 1896, and these changes of structure are equalled, if not exceeded, by change of function. An increase of little less than 50 per cent. in the number of beds has been accompanied by a doubling of the number of in-patients treated. Whilst then one operating theatre in use six afternoons in the week served the whole surgical staff, and was the scene of 1300 operations in the year, now four operating theatres are in use mornings and afternoons, and the number of operations has increased to over 4000. Correspondingly the number of new out-patients treated has risen from 38,000 to over 54,000.

But it is not chiefly in the volume of the work accomplished that the contrast is noteworthy. I would stress rather the profound alteration in the character of the services available for patients then and now as the fact of greatest importance revealed by the comparison. In the general medical wards the variety and number of cases which to-day receive curative treatment has increased greatly, and in the general surgical wards the same thing is no less true. In 1896 the only provision for the special branches of medicine and surgery were out-patient clinics for diseases of the skin, of eyes, of teeth, and of the nose and throat; the first three under the care of special members of the staff; the latter confided to the tender mercies of one of the assistant surgeons. To-day all these departments are staffed by two or more specialists—all have beds allotted to them as well as out-patient facilities, and, in addition, equally complete departments exist for nervous diseases and orthopædic cases. No less than nine further special out-patient clinics are conducted by members of the staff with other primary duties, and the demands for special methods of treatment applicable to out-patients are being met by two special treatment clinics. As a result, the size of the honorary staff has increased from 22 in 1896 to 36 in this year. The resident appointments available annually to recently qualified men now number 25 as opposed to 16, and the number of registrars has grown from 2 to 10.

Many, I know, are impatient of the apparently slow progress of medical science, at least in certain directions, and still more, I fear, are somewhat critical of the ever-increasing expenditure and financial demands of the hospitals. Does not the picture, admittedly incomplete, that I have drawn of the changes that a brief period of thirty odd years has seen, suggest that the advance of knowledge thus judged is not so slow after all? There are signs of a change of thought as to the method whereby medical education should be fostered and the care of the sick provided, and more than a hint that in the not far distant future the present conditions of medical practice throughout the country may be radically changed. But we at Middlesex may contemplate these changes without misgivings; rather we look forward to them with confidence.

ROYAL FREE HOSPITAL.

MAUD M. CHADBURN, M.D., B.S.,
SENIOR SURGEON TO THE SOUTH LONDON HOSPITAL FOR WOMEN.

WHEN I entered this school we were rather a big year—there were nine of us. The school was housed on this spot, but in a delightful old dwelling-house with a nice bit of garden which had belonged to a

mistress of one of the King Georges, I forget which. As the school was growing, we shortly acquired a lecture room, a corrugated iron building in the garden, and felt very big and roomy. Since that time next-door houses have been taken, and these fine buildings erected, and you are not a big year with 60 entries. Growth like this does not mean nothing; it means prosperity, it means demand.

At the time I entered it was difficult to keep a foothold at the Royal Free Hospital; we all had to leave at 6 P.M., no one there wanted us. I can remember it being said that women would never be residents, and as for getting on the honorary staff, it was unthinkable; so we set about to make our own opportunities, and I saw as a student the foundation-stone of the Elizabeth Garrett Anderson Hospital laid by Queen Alexandra when Princess of Wales—and heard that King Edward, then Prince of Wales, said "As nurses, yes, I admire you and approve, but I can't take you as doctors." Since that time the Royal Free has opened its doors freely, and we have women residents and women members of its staff; and I have seen and assisted in the ceremony of the laying of the foundation-stones of two more hospitals officered by medical women—the South London Hospital for Women and the Marie Curie Hospital—and have also seen a new and much larger Elizabeth Garrett Anderson Hospital arise from the foundations of the old one. All this growth does not mean nothing; it means, as I have said, demand for your services. The fact that some medical schools have closed their doors to women means nothing, because those doors were never really open. I, personally, am glad they have closed; I don't believe in half-open doors. I am proud to say that women have made their own opportunity, and grown their own plums—a much better way than taking them from others.

There are not now, and there never will be, enough women doctors; the supply is limited, and from the nature of things always will be.

If you are willing to work hard and if you have health, character, and average ability, you will be equal to any form of medical work. But you must put it first and do it well.

Medical work is so peculiar, so different from any other sort; it has so many aspects. It is not an exact science: 2 and 2 don't always make 4, nor does adding 2 and 2 always give the same result, and for this reason experience is perhaps more valuable than in any other profession, and experience is not gained from books, but from work. Then the personality of the doctor interacts with the personality of the patient and affects work in a way that it does in no other profession. You have heard it said that a lawyer sees people at their worst, a clergyman at their best, and a doctor as they really are; and though sometimes you will get tired of seeing them as they really are, it is much more interesting than any other way of seeing them. Then, again, you are not working for yourself, but for someone else, whom you may like, or you may dislike, but who has trusted you with her health, often with her life, and anything short of your best is a medical crime. To be always at the best level is strenuous, but there is no second best for you when you enter our profession. There is no time at which your work begins and ends. Knowledge is for ever growing, and, like Lewis Carroll's Alice, it will take you all the breathless running you can do to keep in the same place.

Very much the same qualities make a good student as make a good doctor. Much more than learning is required. A senior member of our community once said to me, "We have plenty of ability amongst us, it is character we want." That is still true.

There is an art in the management of patients which must be learned and which one learns by experience, but which comes much more naturally to some people than to others. Patients do much better led than driven—you must make them feel they want to do what you want them to do, and that is not by any means always by persuasion. There is much more in it than that; they must feel that for the moment they are the centre of the universe to their doctor and that their doctor is clever, able, and well-balanced in judgment, and that she is giving them experienced and considered advice. I recommend here also the wisdom of the serpent together with the harmlessness of the dove. It is often necessary to be high-handed, but always a lead, never a drive. Lord Knutsford, in addressing the nurses at the London Hospital, is reported as saying "there is all the difference, when the patient calls, between 'What do you want now?' and 'What can I do for you?'" This illustrates what I mean by a lead and a drive. All this is equally true, though in a different way, for doctors' management of cases.

ST. GEORGE'S HOSPITAL.

LORD RIDDELL.

THE intelligent layman views with amazement and anxiety existing conditions regarding panel practice and the medical services generally. The panel doctor is a sort of medical slave, employed, or at any rate paid, by commercial or semi-commercial institutions. He must prescribe in accordance with certain rules. If these are transgressed he is subject to serious fines and other penalties. He is also subject to penalties if he is too free in granting certificates entitling patients to disablement allowances. On the other hand, the less he does for his patients, the easier time he has. Except in cases of gross negligence, there is no penalty for under-prescribing or inattention. Most of his serious cases, and a good many that are not serious, are passed on to or drift into the out-patients' departments of the voluntary hospitals, which every day in the year except Sundays and Bank Holidays treat hundreds of thousands of patients, a large proportion of whom are on the panel. The 12 London teaching hospitals alone treat about 12,000 out-patients per day. So great has the strain become upon some of these institutions that they have been compelled to require payment of a registration fee by out-patients. It would be interesting to discover how many of the 14,000,000 panel patients are treated largely at the expense of the charitable public, and for what diseases. Perhaps we should then find out what the panel patient gets, or what it is possible for him to get for the 9*s*. per annum paid to his doctor, plus the £10 16*s*. 8*d*. per annum per 100 patients allowed for drugs, or an average of 2*s*. 2*d*. each. It is certain that, but for the voluntary hospitals, the panel system would very soon completely break down.

There are other strange factors in our medical system. Hundreds of thousands of people are making voluntary contributions to entitle them to voluntary hospital treatment. These patients are treated by doctors mostly unpaid, or who receive very meagre salaries. Side by side with this muddle we have a vast system of municipal hospitals which provide not only for lunacy, fevers, and chronics, but also for general medical and surgical cases. They have no out-patient departments and charge £2 9*s*. per

week for each bed, unless the patient proves his inability to make the payment. Voluntary hospital patients, on the other hand, need pay nothing, but in fact they provide about one-fourth of the cost of running these institutions.

There are already 14,000 panel doctors. Now the British Medical Association are proposing that the compulsory panel system should be extended to the dependants of insured persons. I confess I regard this proposal with grave apprehension. The whole subject demands careful investigation by an independent commission, for in addition to the various uncoördinated services I have mentioned there are numerous others, in the shape of maternity clinics, child welfare clinics, school clinics, &c., all of which should be coördinated as part of a more economical and efficient system. Serious issues are at stake involving not only the health of the people but the education, status, and well-being of the medical profession, which are matters of national importance.

From time immemorial doctors have been in the habit of shrouding themselves with a sort of halo of mystery. In an irreverent and inquiring age, when even the most sacred haloes have been snatched off, the medical halo has not escaped public attention. The educated man or woman wants to know what ails him or her, more or less what the medical adviser proposes to do, and what course the disease is likely to take. In short, the patient wants particulars of the diagnosis, treatment, and prognosis, and in these days unwillingness on the part of the doctor to disclose these particulars is often regarded as evidence of ignorance.

WESTMINSTER HOSPITAL.

REV. J. SCOTT LIDGETT, D.D.,
VICE-CHANCELLOR OF THE UNIVERSITY OF LONDON.

MEDICINE is an art. It is primarily remedial. It is concerned with healing and with healing with a view to realising the ideal of individual and collective health. It deals with what is from the standpoint of human life, efficiency, and happiness—the abnormal. Its ever surer diagnosis and its ever-extending research lead it to seek out not merely the symptoms but the causes of what it regards as abnormal for the very reason that it is injurious. Its practical treatment seeks, in like manner, not merely to remedy or alleviate the symptoms, but to ascertain and, if possible, to eliminate their causes.

The University has, as its very name suggests, universal science as its province. It deals with all the realities of actual and factual existence. From the standpoint of science, whatever *is*—that is to say, exists—must be treated in the first instance at least as normal. All the phenomena of our cosmic existence are *there* and are organically related in the system and development of the world. For example, the most deadly bacteria which are treated by medicine as the enemy have their laws of nature in common with all the more pleasant and desirable phenomena of the universe. They must therefore be studied thoroughly and dispassionately by biological science. Adequate description, measurement, classification and proximate explanation of the whole realm of existence lie within the realm of science, and therefore become a problem of the University.

The State stands for authority, for the government, to use Lincoln's historic phrase "of the people, by the people, for the people." In England at least, and until recent times it was sought to limit the functions of the State to the interests of defence—external and internal. The State was responsible for securing the safety and the freedom, within limits, of its subjects. It had to safeguard their continued being. Yet, as experience has growingly shown, the being of the citizens of the State can only be maintained by ever-increasing and more comprehensive endeavours to promote their well-being. Even the Englishman has become convinced, however reluctantly, of this necessity. Hence, the State, which began for the most part by being remedial, has become increasingly preventive and constructive in its constantly multiplying tasks. It is therefore constrained to call to its aid all the available resources of science and art, of knowledge, and of practical skill. For the furtherance of its work it must turn ever more constantly to the outstanding representatives and centres of science and medicine.

Hence the interdependence of the Medical School representing the art of medicine, of the University representing science, and of the State representing the authoritative and constructive government of the well-being of the people. Medicine as an art is dependent upon the whole range of the sciences. It may be affirmed that, within practical limits, the wider and more thorough the scientific knowledge of the medical student becomes, the stronger background and the more effective instrument he will have for carrying on his remedial art. This debt is always in process of being repaid; for the diagnosis of the abnormal by medicine is of service in understanding more fully the world which, as it exists, is the province of science and, as it should be from the human standpoint, is the concern, in part at least, of the State.

As the State becomes constructive, it casts the light of its great ideal over medicine and science. Medicine becomes increasingly not merely remedial, but preventive. It treats the establishment of the conditions of health as the best prophylactic against disease.

The sense of obligation to the State will develop a truly social aim, a spirit of confident, though cautious, venture, and a disposition to seek organised coöperation in the service of public health. All this involves intense and patient human sympathy and the highest consecration which subordinates the desire of individual advancement, however legitimate, to the great social end of the well-being of the community that must become increasingly the ideal and inspiration of the medical man.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

ARTHUR W. HILL, C.M.G., D.Sc., F.R.S.,
DIRECTOR OF THE ROYAL BOTANIC GARDENS, KEW.

THE general rules that guided the founders of the system of plant signatures, which were supposed to reveal the occult powers and virtues of vegetables, would seem to have been the following: Vegetables, as herbs and plants, or their fruit, seed, flowers, &c., which resemble some human member in figure, colour, quality, and consistence, were considered to be most adapted to that member, and to possess medical properties specially applicable to it.

That great naturalist, John Ray, whilst expressing his disbelief of the Doctrine of Plant Signatures as a whole, admitted that there were tangible grounds for the formation of the system. He wrote:—

"Howbeit, I will not deny but that the noxious and malignant plants do, many of them, discover something

of their nature by the sad and melancholick visage of their leaves, flowers, or fruits. And that I may not leave that head wholly untouched, one observation I shall add, relating to the virtues of plants, in which I think is something of truth; that is, that there are, by the wise dispensation of Providence such species of plants produced in every country, as are made proper and convenient for the meat and medicine of the men and animals that are bred and inhabit therein. Insomuch that Solenander writes that, from the frequency of the plants that spring up naturally in any region, he could easily gather what endemical diseases the inhabitants thereof are subject to. So in Denmark, Friesland, and Holland, where the scurvy usually reigns, the proper remedy thereof, Scurvy-grass, doth plentifully grow."

This interesting quotation from John Ray suggests to me some important drugs yielded by plants with which Kew has been specially concerned, and I will refer to two in particular, Cinchona, the source of quinine, and the plants whose seeds furnish Chaulmoogra oil, the reputed cure for leprosy. Cinchona, as you know, is native in the tropical valleys of the Andes of Northern South America, where malaria is prevalent, as it also is in other tropical regions. As to the date and manner of the first discovery of the curative effects of cinchona bark in malarious fevers we know nothing, and it seems clear that the Indians were unaware of the virtues of the plant growing in their midst until the arrival of the Spaniards. It was due to the Countess of Chinchon, wife of the Spanish Viceroy, whose name the genus now bears, that the value of the drug became known in Europe, for she brought over the first consignment of bark about the year 1639, having previously been cured by its use of an attack of fever. I need not go into all the interesting history relating to the discovery and introduction to cultivation of the various species of cinchona, but will merely remind you that Sir Clements Markham was entrusted with the difficult task of procuring supplies, and it was due to his efforts and to the efforts of Spruce, Pritchett, Weir, and Cross, and the energetic coöperation of the then Director of the Royal Botanic Gardens, Kew, that the various consignments of seeds and plants were brought to Kew and finally despatched to India in the year 1861. To the late Sir George King, and to my predecessor in office, Sir David Prain, the success of the cinchona enterprise in India is largely due, and attempts are being made to extend the cultivation in India and Burma and at Amani, in Tanganyika Territory, to help to provide the supplies required within the Empire. Chaulmoogra oil has been in use for hundreds of years by the natives of India in the treatment of leprosy, but it is only in recent years that it has come to be a matter of general interest. Thanks to the work of Dr. Power and Dr. T. A. Henry at the Wellcome Chemical Research Laboratories, to Sir Leonard Rogers, and also to investigators in the United States, we now have detailed knowledge of the chemical constituents of the oils and their therapeutic value. True chaulmoogra oil is the fatty oil expressed from the seeds of *Taraktogenos kurzii* King, and it is due to the researches of Sir David Prain, when he was in India, that this determination was definitely substantiated. I do not propose to dilate on the chemical nature of the oils, since anyone interested can study the matter in Mr. Joseph Rock's interesting account of The Chaulmoogra Tree and Some Related Species [1] but I may remind you that *Hydnocarpus anthelminthica* Pierre, from Siam, *H. wightiana* Blume, from Bombay, *H. castanea* Hook. f. & Thoms., a native of Burma, *H. woodii*, from N. Borneo, and some other species, possibly five or six in all, yield oils which are a specific for leprosy.

The United States Department of Agriculture have established plantations of *Taraktogenos kurzii* in Hawaii, and Kew has recently been active in sending seeds of this tree and some of the other useful species to those parts of the Empire [2] where they are likely to flourish, and the trees are now growing well in Ceylon, Malaya, and elsewhere.

Leper colonies have long been established in the countries where leprosy is prevalent, and here again we have a demonstration of the profound truth of John Ray's remark, which I have quoted, as well as of the urgent necessity of the systematic examination and careful observation of the vegetable products of a locality.

[1] United States Dept. of Agric. Bull., No. 1057, April 24th, 1922.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

CANCER IN SOUTHERN INDIA.

WRITING in the *Indian Medical Gazette* on the use of radium in cancer Lieut.-Colonel E. W. C. Bradfield, I.M.S., senior surgeon to the Madras General Hospital, makes some interesting observations on the incidence of malignant disease in India. Under urban conditions in Europe it is not always easy to obtain the after-history of cases, and in India there are special obstacles to overcome. Even in the large city hospitals many patients treated come from a considerable distance, and it may be often impossible to trace their ultimate progress. Colonel Bradfield's conclusions are consequently based largely on general observation, but even so they are particularly valuable at a time when the use of radium, as an alternative to operative treatment, is attracting many who formerly concealed their malady through fear of the surgeon's knife. From a consideration of the larger number of cases which is now available for observation, Colonel Bradfield deduces that the incidence of malignant disease in South India, contrary to what has hitherto been the general impression, is much the same as in other parts of the world. Analysis of the 411 cases admitted during 1929 leads him to revise preconceived opinions. Cancer of the breast, for instance, was supposed to be comparatively rare, but this it seems was due to women concealing the disease; in this series there are 42 cases. Far the largest single item in the list is carcinoma of the cheek and jaw; 143 cases would appear excessive in comparison with European practice, and the tongue furnishes an additional 44. How far these large figures may be due to betel-chewing is not discussed. In the treatment of cancer of the tongue radium has entirely displaced operation in this hospital. Carcinoma of the rectum and penis account for 25 and 27 cases respectively. Gynæcological cases are not included in the series, being mostly treated in the women's hospital.

BACTERIOPHAGE FOR DYSENTERY.

In Assam the local practitioners have the advantage of the advice and assistance of Lieut.-Colonel J. Morison, I.M.S., who has from the first interested himself in bacteriophage, and as head of the Pasteur Institute of Shillong is able to furnish them with the necessary material. Dr. J. London has published an account of an outbreak of bacillary dysentery on a

[2] Kew Bulletin, 1926, pp. 17–23; Kew Bulletin, 1927, pp. 29–56.

tea garden, in which it was decided to employ bacteriophage uniformly. In ordinary cases two doses were given daily by the mouth, on an empty stomach, the maximum number of doses administered daily in any case being four. The results were satisfactory. Blood as a rule disappeared from the stools in three to four days, and the patient became less depressed and listless, marking an early diminution of toxicity. Of 141 cases treated, 108 which received no other treatment than bacteriophage did well and were discharged cured. The remainder did not respond so well, and were eventually treated by other methods. Of these 12 died, giving a mortality of 8·5 per cent. for the whole series. No controls were kept, the only comparison available being some cases treated by other methods during the same year (1929) on other estates in the district. Of these a series of 72 is quoted, with a mortality of 12·5 per cent. Although a universal microscopical examination of the stools was not practicable, stools were examined microscopically at intervals, and the outbreak was evidently of the bacillary type. In no case were entamœbæ found. Dr. London notes as an incidental advantage that bacteriophage is much less unpopular with the average coolie than injection methods.

THE PROJECTED INDIAN MEDICAL COUNCIL.

There is every indication that the necessary preliminary steps are being taken to frame a Bill to establish a medical council for India. The action of the General Medical Council in withdrawing recognition of Indian degrees has at all events had the effect of emphasising the urgency of this measure. A conference of representatives of provincial governments and medical faculties convened by the Government of India in June expressed regret at the action of the G.M.C., and asked the Government to amend the rules so as to enable graduates of Indian universities, whose names are on the register of any of the provincial medical councils, to be recruited for the I.M.S. without registering in England; but it was at the same time unanimous that an all-India organisation should be established, and recommended that this should be called the Indian Medical Council. According to the *Pioneer* the consensus of opinion was that the Director-General, I.M.S., should be the president of the first council, and that, in addition to three members nominated by the Viceroy, one member should be nominated by the government of each province having a medical college, and one by the medical faculty of each university, one medical graduate also being elected by each province. The member in charge assured the conference that no avoidable delay would be allowed to occur in drafting the Bill, and he seems to have expressed the modest hope that it might be possible to introduce the Bill in the Legislative Assembly in the winter session of 1931.

PUBLIC HEALTH SERVICES

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are 1929 statistics of two cities, one county borough and three urban districts, one in the "shires," of which boot and shoe manufacture is the staple industry, and the others on the North Wales and Durham coal-fields respectively.

Name of district and estimated (R.-G.) mid-year population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and neonatal mortality.	Young child (1–5 yr.) mortality.	Maternal mortality from childbirth.
Birmingham (968,500)	17·5	13·4	1·10	1·35	3·4	2·1	79/32	47	4·0
Bradford .. (289,200)	15·0	15·7	1·01	1·54	4·4	1·6	80/35	46	5·7
Bolton .. (181,500)	14·2	15·4	0·81	1·14	3·9	2·6	104/38	74	8·5
Kettering .. (31,070)	13·7	11·3	1·22	1·13	1·2	2·2	54/35	—	9·4
Wrexham .. (18,150)	17·0	12·8	0·99	1·65	1·8	3·0	38/—	26	6·4
Chester-le-Street .. (16,500)	17·2	12·3	0·79	1·27	2·7	2·0	102/49	46	3·5

Stillbirths per 100 live births: Birmingham 3·5, Bradford 4·8, Bolton —, Kettering 3·5, Wrexham 4·5, Chester-le-Street 3·5.

Birmingham.

Dr. H. P. Newsholme says the records of the city were coloured by the grave epidemic of influenza which swept over the country coincidently with a spell of bitterly cold weather. The general death-rate rose rapidly in the middle of February, reached a figure in the first week of March (46·6) higher than in any week of the 1918 epidemic, and in another four weeks was back to the normal level. The percentage increase of deaths during the first quarter of 1929, when compared with the average of the preceding five years, at age-periods was—under 1 year 15 per cent., 15 to 24 years 21 per cent., 25 to 44 years 32 per cent., 5 to 14 years 34 per cent., 45 to 64 years 68 per cent., 1 to 4 years 72 per cent., and 65 and upwards 92 per cent.—thus showing that infants came off best and young children and old persons worst. The influenzal mortality for the year affected the central, middle, and outer groups of wards similarly, and the highest rate in an individual ward was recorded in Edgbaston. On March 1st Pype Hayes Convalescent Home was opened as an emergency hospital for pneumonia cases under 5 years. Dr. Ursula Cox, who was in charge, reports that of 65 children admitted almost all were very severe cases and several moribund. Of 53 pneumonias treated 21 (or 40 per cent.) died. There was one lobar, the others being broncho-pneumonia. Resolution and full recovery were very slow among the survivors. Dr. Cox thinks the comparatively low case-fatality was due to highly efficient nursing and the fine weather which permitted open-air treatment.

There were 1611 cases of diphtheria with a case-fatality of 5·3 per cent. Immunisation is growing in popularity but is not on a scale sufficient to affect prevalence. The children and others protected during 1929 were 3759 and previously 5626. Immunisation has proved useful in controlling diphtheria in residential institutions and toxoid antitoxin is now supplied on request to medical practitioners. Scarlet fever of a mild type was excessively prevalent in August–September. Total cases were 2413 and deaths 9. Dr. E. H. R. Harries reports that of 1531 cases admitted to hospital 646 were treated with serum and 885 without. Any ordinary case of scarlet fever is now discharged on the 26th to the 32nd day from onset and desquamation is neglected. This earlier discharge has not increased the return case rate. The non-serum cases were of mild type or those admitted desquamating or with some late complication of the disease; whilst the serum group were all the severer cases admitted within four days from the onset of the disease. When the two groups are compared

it is found that the percentage ready for discharge in the minimum time was practically the same and that the serum group had a slightly lessened liability to complications and relapses. Since November, 1928, a free supply of serum has been available for practitioners, but as yet this facility has been little used.

Measles caused a death-rate in the central wards more than four times that which occurred in the "outer ring," and nearly half the deaths occurred at age 1–2. It is difficult to obtain serum for prophylaxis from measles convalescents, as required, and Dr. Harries reports that the serum of young probationers who could give a clear history of an attack of measles in childhood has been forthcoming and has proved quite successful. The central wards death-rate for whooping-cough was more than double that of the outer ring. The records of five previous years give the highest number of deaths in the first year of life, but in 1929 there were 46 deaths in each of the first two years. There were four deaths from enteric fever in 1929, and Dr. Newsholme describes an outbreak of 38 known cases affecting 19 households at Bordesley Green, which was in progress at the close of the year. It seemed evident that this outbreak was due to a localised source of infection operating during the first half of December, but a most exhaustive investigation yielded no definite clue.

The damage to eyesight by ophthalmia neonatorum was 1 baby blinded in both eyes, 1 in one eye, and 4 with other impairment, as compared with 4 blinded in both eyes, 6 in one eye, and 8 other impairments last year. Most of the cases are treated at the Eye Hospital. In 1929 those treated as in-patients numbered only 37 to 434 treated as out-patients. The hospital have set aside two specially experienced nurses for the home visiting of the cases under out-patient treatment, and the health committee are contributing towards the cost of this arrangement.

Bradford.

Dr. J. J. Buchan shows that the influenza epidemic affected Bradford differently from Birmingham. In Birmingham the general death-rate when compared with the previous five years was higher by 2·1 and the deaths were increased at every age-period but chiefly at 1–5 years and over 45. In Bradford the general death-rate was 1·5 up compared with the five years average, but the excessive mortality was almost entirely among the old. Thus a table comparing the number of deaths at each age-period in 1929 and the previous five years shows that in 1929 the deaths under 1 year were 68 less, from 1 to 2 twelve more, from 2 to 5 three more, from 5 to 15 eighteen more, from 15 to 25 two more, from 25 to 45 eight less, whilst from 45 to 65 and from 65 upwards they were 119 and 337 more respectively than the average of the previous five years. The death-rate from diphtheria (0·16) was higher than in any of the last ten years. There were 401 cases with 47 deaths, giving the high case-fatality of 11·7 per cent.

The bacteriological and pathological work has increased to such an extent as to call for an increase of staff and extension of premises. The city pathologist, Dr. M. A. C. Buckell, suggests that the standards for designated milks have played an invaluable part in cleaning up the milk-supply but require revision. Now that over 60 per cent. of the ordinary street samples are able to pass the highest grade, the stimulus of the standards is lost. The samples examined for anthrax numbered 475. Two human samples gave negative results, and 1929 is the only year of the last decade in which there has been no case of human anthrax in Bradford. Out of 51 local samples of wool, &c., *B. anthracis* was recovered from one out of 24 samples of alpaca and from two out of eight of alpaca dust. The bacillus was also recovered from 29 out of 192 samples of raw wool from the Government station at Liverpool, but from none of 158 samples of disinfected wool from the same source. The examination of 104 samples of ice-cream revealed gross pollution in many, and Dr. Buckell points out that a bacteriological standard of cleanliness is urgently needed for this article with means to enforce it.

As the result of many observations 104 chimneys were found to be emitting black smoke for more than three minutes in half an hour. Fourteen successful prosecutions resulted in fines totalling £53 15*s.* 6*d.* In one unusual case it was found that the defendant had a furnace constructed to consume its own smoke when coke was used as a fuel, but he was convicted and fined because he was using coal. A grit nuisance from factory chimneys where cheap small slack is the fuel has been under observation for five years. The slack is projected into the furnaces by the swinging shovels of mechanical sprinkling stokers. Legal proceedings have resulted in a reduction of the discharges of grit and a portion of the plant has now been removed to more suitable premises. Electricity for domestic purposes has increased greatly. The units sold for this purpose in 1925 were 4,020,401 and in 1929 were 15,486,653. Better methods of gas manufacture have reduced relatively the amount of coal carbonised. Thus in 1925, 161,036 tons of coal produced 2,156,281 cubic feet of gas and 77,527 tons of coke, whilst in 1929, 154,265 tons of coal produced 2,262,505 cubic feet of gas and 75,193 tons of coke.

Bolton.

Dr. C. W. Paget Moffatt shows that influenza did not spare the infants, as it did in Bradford and comparatively so in Birmingham. For the first quarter of 1929 the infant mortality-rate was 198 and the general death-rate 28·0, as compared with 94 and 16·7 respectively in 1928. The only age-period which did not show an excess mortality was from 10 to 25 years. Bolton had its worst year from whooping-cough since 1918, and 28 of 266 infant deaths were attributed to this cause. All except the mild cases of scarlet fever treated in hospital received antitoxin with, it is said, the most striking benefit. One of the 52 known cases of small-pox died—a feeble and infirm man of 74 years, whose death was not thought to be accelerated by small-pox. There were no cases under 20 years among persons successfully vaccinated in infancy. Two cases of encephalitis lethargica were notified and five deaths were certified of unnotified persons. Diphtheria had the high case-fatality of 11 per cent.—73 cases with eight deaths.

It is estimated that all the pail-closets and privy-middens will have been converted by the end of 1931. A special smoke inspector is to be appointed during 1930. Bolton has a permissible limit of two minutes in the half hour for black smoke, with the curious proviso that bursts of black smoke for less than 30 seconds must not be counted. Of 779 new houses 439 were by private enterprise and subsidised and 228 were municipal. Persons per house were 4·64 at the 1901 Census and 4·28 at the 1921 Census and are now estimated at 3·83. More houses are needed. Many families are living in houses which ought to be closed and a very large number are victims of that extremely greedy type of private enterprise—houses-let-in-lodgings. Dr. Moffatt divides the inhabitants of slum areas into three classes. First come those who are there only because they have slum incomes and whose dwelling is frequently an oasis of cleanliness in a desert of dirt. They must have decent houses at a price they can afford. Second comes the class with slum habits, who could pay for a reasonable house, and many of whom would respond to a better environment. Third comes the class with slum habits and slum incomes who must be housed by the community and made by strict supervision to comply with a reasonable standard of living. Dr. Moffatt records with emphasis his conviction that Bolton's slum problem will never be solved by the provision of housing estates with 11 houses to the acre.

Kettering.

The report submitted by Dr. Cecil B. Hogg, who succeeded Dr. John Allison on Jan. 1st, 1930, after acting as assistant for a month, conveys the impression of an active authority well supported by voluntary

bodies. Although 11 deaths were ascribed to influenza in February to April, the outbreak subsided quickly, and the death-rate from respiratory diseases shows that Kettering was let off lightly. A joint hospital board provides accommodation for infectious diseases and small-pox for the town and other districts. There were five deaths among 88 cases of diphtheria admitted. For the town alone 71 cases and three deaths were recorded. Among the school-children 35 cases of heart disease (as compared with 43 in 1928) were found and are kept under supervision. Ninety-five maternity cases were admitted to the beds subsidised at the General Hospital. For the second year in succession the Maternity and Child Welfare Voluntary Committee won "The Astor Shield" for the most effective local Baby Week campaign in the country. The school ophthalmic, dental, and orthopædic clinics are available for the pre-school children. A folk dance class during the winter was very popular among the "centre" mothers. Additional land has been acquired for playing-fields and a new sports pavilion is being built in the North Park. Despite the prolonged drought a full water-supply was maintained. Wells supplying 56 houses were adversely reported upon by the analyst, and 69 such houses were provided with town's water. Scavenging is being improved by the adoption of dustless refuse-collecting wagons.

Wrexham.

Dr. T. P. Edwards says that the water company maintained an uninterrupted supply during the drought. The rainfall was 31·0 in., only 4 in. below the average, but 17·19 in. fell during the last quarter, leaving only 13·81 in. for the rest of the year. The possibility of using for an additional supply the well which serves the swimming baths was considered, but this water, although excellent in appearance, was found when analysed "to be grossly contaminated with excremental pollution." If swimming baths supplied with pure water need a chlorino-filtration installation, such a process would seem to be essential for the Wrexham baths. During the year the Cheshire authorities raised the question of the condition of the Gwenfro which flows through the town. This river is subject to industrial pollution in the district of Brymbo and also receives the rural district's effluent, before entering the town. Samples taken by Dr. Edwards seem to indicate that the river arrives polluted, purifies itself as it flows on, and is again polluted by receiving the effluent from the borough sewage farm a few miles lower down. Dr. Edwards points out that complaints were made when the river water was very low and that, when the urgently needed re-sewerage of the borough is put in hand, storm water can be diverted and the condition of the sewage farm so improved.

Municipal houses built numbered 68; 57 more have been begun; and 30 acres of land have been purchased for the erection of a further 320. There are may applications for houses and insanitary areas are awaiting demolition. Another sign of the need is that 30 per cent. of the confinements took place either in apartments or overcrowded houses, which last should also stimulate the negotiations with the County Council for the provision of a joint maternity hospital.

Chester-le-Street.

Dr. W. E. Roper Saunders (who was recently appointed M.O.H. of Rowley Regis) shows that but for the influenza epidemic the health statistics would have improved. As it was they were no worse. The death-rates for 1927–28–29 were 12·5, 12·9, and 12·3 and the infant mortality-rates 119, 105, and 102. Evidences of the epidemic were—13 deaths, compared with 3 in 1928, were ascribed to influenza; 75 of the 204 deaths occurred in the first quarter, and 37 in March; 8 of the 15 deaths of infants after the first month were due to pneumonia, and 7 of the 13 deaths at 1 to 5 years age-period to pneumonia and bronchitis; and 27 of the 36 notifications of pneumonia were made in the first quarter. Dr. Saunders says there is much misundertanding as to what cases have to be reported; he points out that the only non-notifiable pneumonias are those secondary to some disease other than influenza. The joint Isolation Hospital has insufficient beds for the districts which it has to serve. The use of antitoxin is claimed to have shortened the stay of scarlet fever cases by a week. More institutional accommodation is needed for adult female tuberculosis cases, and it is suggested that poor-law hospitals (taken over) will provide needed beds for advanced cases who ought to be within reach of their relatives.

The pollution of the local burn by domestic refuse is less than it was but industrial pollution remains. Refuse disposal is unsatisfactory. Dealers who distribute food and toys in exchange for rags and bones have been stopped under Section 73 of the Public Health Act, 1925. Of the numerous motor-bus companies working the district only one makes a thorough attempt to cleanse its vehicles. In one area there are 300 worn-out damp houses. The Chester Moor Colliery Co. are improving their village very much, pulling down obstructive buildings, converting back-to-back into through houses, and putting in electric light and baths.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 20TH, 1930.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 61 (last week 75); scarlet fever, 1696; diphtheria, 1290; enteric fever, 64; pneumonia, 409; puerperal fever, 49; cerebro-spinal fever, 9; acute poliomyelitis, 21; acute polio-encephalitis, 2; encephalitis lethargica, 19; dysentery, 6; ophthalmia neonatorum, 93. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Sept. 23rd–24th was as follows:—Small-pox, 200 under treatment, 2 under observation (last week 216 and 1 respectively); scarlet fever, 1426; diphtheria, 1708; enteric fever, 22; measles, 100; whooping-cough, 118; puerperal fever, 24 (including 12 babies); encephalitis lethargica, 119; "other diseases," 32. At St. Margaret's Hospital there were 17 babies (plus 9 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 2 (1) from enteric fever, 10 (4) from measles, 3 (1) from scarlet fever, 11 (2) from whooping-cough, 23 (3) from diphtheria, 66 (20) from diarrhœa and enteritis under two years, and 11 (1) from influenza. The figures in parentheses are those for London itself. No death from small-pox was returned in the month of August from areas outside the great towns.

The death from enteric fever outside London occurred at Walthamstow. Willesden reported 4 deaths from whooping-cough, Leeds 2. Derby and Liverpool each reported 2 deaths from diphtheria. Fatal cases of diarrhœa numbered 9 at Liverpool, 4 at Portsmouth, 3 each at Burnley and Leeds, 2 each at Birmingham, Birkenhead, and Manchester.

The number of stillbirths notified during the week was 265 (corresponding to a rate of 42 per 1000 births), including 60 in London.

THE ROYAL EYE HOSPITAL, SOUTHWARK.—Last year there were 716 in-patients and 22,149 out-patients at this hospital. After carrying on an increasing work for 70 years the hospital's resources are now so seriously diminished that, failing increased support, a curtailment of its activities can hardly be avoided. It is desired to increase the number of beds from 46 to 80, to enlarge the out-patients' accommodation, and to provide a suitable nurses' home. It was stated at the annual meeting that this is the only large ophthalmic hospital in London that has not been rebuilt in the last 30 years. To extend the hospital, provide 80 beds, and afford adequate accommodation for surgeons, post-graduates and nurses would cost £100,000. There was a deficit on last year's working of £1287.

OBITUARY

CHARLES POWELL WHITE, M.D. Camb., F.R.C.S. Eng.

Dr. Powell White, sometime director of cancer research at the University of Manchester, died suddenly at Streatham on Sept. 26th after two years' illness. The fourth son of Prebendary L. Barrett White, D.D., he was born in 1867 in London, and was educated there at St. Paul's School. He then went to Sidney Sussex College, Cambridge, and later to St. Bartholomew's Hospital, whence he qualified M.R.C.S., L.R.C.P. in 1894 and M.B., B.Chir. Camb., in 1896, in which year he also became F.R.C.S. Eng. Shortly after qualifying he obtained a studentship in pathological research and this success doubtless influenced his future career, for his whole life thenceforward was devoted to pathology. He became senior demonstrator in that subject at Yorkshire College, Leeds, and later assistant pathologist to St. Thomas's Hospital. Later he migrated to Manchester and it was here that his chief work was done. As pathologist to the Christie Hospital for Cancer, he had access to material of which he made full use.

Powell White will be missed by his fellow pathologists (writes one of them). He was first treasurer of the Pathological Society of Great Britain and Ireland, and had for many years been a well-known and well-liked figure in British pathology. He really loved knowledge and its pursuit, and his evident sincerity earned the respect of everyone even if they had no chance of knowing him well enough to be fond of him. At Leeds, St. Thomas's, and Manchester he went on in his steady way and under conditions which were not always exactly to his liking, and in spite of a curious ingrained laziness he did a good deal of notable original work. In 1899 he published a paper on the classification of tumours which attracted attention and was widely quoted in days when the orderly arrangement of the facts was more important than it is now. In 1902 he delivered and published in THE LANCET the Erasmus Wilson lectures at the Royal College of Surgeons on the pathology of tumours. A small book in 1912 summed up his more considered judgment on this subject, and as late as 1927 he wrote an account of a variety of queer tumours which had come to his notice, mostly at the Christie Hospital in Manchester. He was early in the field (1909) with experiments on the influence of agents such as oleic acid and scharlach in causing abnormal epithelial growth and metaplasia, and a loafing holiday at Criccieth catching lizards along the sea-front evolved into a very interesting account of the regeneration of the lizard's tail, though characteristically the paper did not appear till 11 years after the material had been pickled. In Manchester, partly in association with Lorrain Smith and Mair, he worked at the microscopical characters and indentification of fats and lipoids. He spent a great deal of time studying the presence of traces of the heavy metals in tumours, and in 1925 published an inquiry into the statistical correlations between the various constituents of urine—a mode of approach to the action of the kidney which no one else seems to have had the courage to tackle. His attitude towards his subject, can, however, best be appreciated by reading the earlier chapters of his "Principles of Pathology" (1927) in which he found scope for preaching the broad generous creed by which he worked. The fundamental principles of pathology are, he said, the same as those of biology, to wit (1) all living organisms grow and reproduce themselves, (2) the young tend to vary from their parents, (3) all living organisms tend to adapt themselves to changes in the environment. He insisted, too, that there is no living substance, only living things. And on this basis of what seemed to him (and to many thoughtful people) the simple truths of the post-mortem room, he proceeded to erect a skeleton outline of pathology—not with complete success, but in a stimulating provocative way which must do good to our general outlook. The book has probably not been widely read; it is certainly no good for examinations; and, indeed, throughout his career Powell White was more a pathologist for pathologists than a pathologist for undergraduate students. Two years ago he was hopelessly crippled with a stroke, and his death is a happy release from an existence which he found very irksome.

PHŒBE MILDRED BIGLAND, M.D., D.P.H. Liverp., M.R.C.P. Lond.

Dr. Phœbe Bigland, who was prominent in the medical life of Liverpool, died on Sept. 24th after an illness extending over several months. The eldest daughter of Canon Powell, of Knotty Ash, she decided early to adopt medicine as a career and entered the University of Liverpool, qualifying M.B., Ch.B. with honours in 1911. She took her M.D. in 1912, and the D.P.H. in 1914, becoming M.R.C.P. Lond. in 1919. After holding resident appointments at the Liverpool Stanley Hospital and at the Royal Free Hospital she became John W. Garrett Fellow in pathology and demonstrator in pathology at the Liverpool University. During the war she was appointed acting physician at the Stanley Hospital and Liverpool Royal Infirmary, where she did much valuable work as locum tenens for members of the staff absent on war service. For 13 years she held the post of assistant lecturer in pathology, and was never happier than when she was assisting the late Prof. Ernest Glynn in teaching pathology and in the research work which they undertook together. Their work, published jointly, included observations on the standardisation of bacterial vaccines and improved methods of standardising them, and also a report to the Medical Research Council, published as a green book (No. 107) in 1926, on the effect of treatment on the Wassermann reaction of syphilitic patients. As clinical assistant to the venereal department of the Liverpool Royal Infirmary, Dr. Bigland had ample opportunity to study syphilis, and her more recent contributions to medical literature are mostly concerned with various aspects of this subject. Her teaching appointment in pathology terminated when the pathological department was reorganised after the death of Prof. Glynn. When the Crofton Hospital for Women was opened Dr. Phœbe Bigland was appointed physician, and she took up the work with her usual strenuous zest. She was interested in the teaching of birth control in suitable cases and was medical officer to the Mothers' Welfare Clinic in Liverpool.

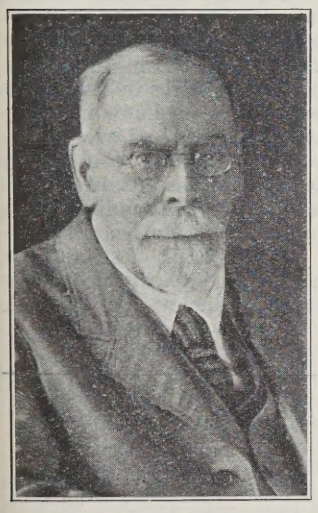
Dr. Bigland was an energetic member of the Medical Women's Federation, and had held the post of President of the Liverpool Association. She was largely instrumental in forming a students' branch

with the object of educating students in medical ethics and in helping them to solve the special problems incidental to their work. She had always associated herself with all movements for the welfare of medical students and colleagues, and entered wholeheartedly into the life of the University. Her affectionate disposition endeared her to many friends who sincerely mourn her loss. Many will have memories of delightful evenings spent in her home in Rodney-street. She married Dr. A. Douglas Bigland in 1918, and leaves also two young children, to whom the sympathy of all will be extended.

WALTER EDMUNDS, M.Chir. Camb., F.R.C.S. Eng.,

CONSULTING SURGEON, PRINCE OF WALES'S HOSPITAL, TOTTENHAM.

Mr. Walter Edmunds, who died at Worthing on Sept. 23rd, at the age of 80, retired from active surgical work in London nearly 20 years ago, but is well remembered at the Prince of Wales's Hospital, Tottenham, to which he was attached. He received his medical education at St. John's College, Cambridge, and St. Thomas's Hospital where, after qualifying M.B. in 1875, he held three successive resident appointments. In 1877 he became M.Chir. Camb. and F.R.C.S. Eng., and in the same year went out to serve as a surgeon in the Turco-Russian war. After his return to London he was appointed the first resident medical superintendent of St. Thomas's Home for paying patients, and soon embarked on the joint experimental and clinical researches that were to employ him for most of his working life. He published in 1891, jointly with Sir Charles Ballance, a book on the Ligation of the Great Arteries in Continuity, with Observations on the Nature, Progress, and Treatment of Aneurysm, and then turned his attention to the thyroid gland. Mr. Edmunds was a keen experimental investigator, most of his work being done at the Brown Institution. He was one of the first to be successful in inducing myxœdema in the monkey, and later proved the possibility of saving dogs from the immediate effect of complete thyroid and parathyroid deprivation by the liberal use of milk and of calcium injections. He never subscribed to the idea, at one time prevalent, that the parathyroids had the same function as the thyroid gland itself, and he lived to see his convictions verified.



MR. WALTER EDMUNDS.

[*Photograph by Edward Bowles.*

At one time he kept, by the courtesy of the late Mr. Brailey, the ophthalmic surgeon, a herd of thyroidless goats on the latter's farm in Sussex. The milk from these goats was sent daily to St. Thomas's Hospital and was used in the treatment of exophthalmic goitre, under the supervision of the late Sir Hector Mackenzie. The conclusion arrived at was that nutrition was improved but that no definite curative results could be obtained. A trial of the dried blood also proved disappointing. Kocher's operative results he followed with the keenest interest. Edmunds was not a man to advertise himself or his doings, and his published results are in no way commensurate with the extensive knowledge he acquired of thyroid conditions. The earlier volumes of the *Journal of Pathology and Bacteriology*, however, contain a series of articles by him on this subject which have not lost their interest. His book on the "Pathology and Diseases of the Thyroid Gland," published in 1901, was an expansion of the Erasmus Wilson lectures he gave earlier in the same year at the Royal College of Surgeons, and published in THE LANCET.

At the age of 50 he was appointed surgeon to the Prince of Wales's General Hospital, Tottenham, and gave ten years of continuous service to the hospital before he retired in 1911. Especially in the out-patient department and in the wards for children his memory will live, for he had a passionate devotion for children which had a further outlet in his work for the local branch of the Invalid Children's Aid Association. He was for a time also on the staff of the Evelina Hospital for Children. Mr. Edmunds did not have the distaste for any sort of administrative work from which men who like research often suffer. During nearly the whole of his time at the Prince of Wales's Hospital he was a representative of the medical staff on the committee of management, and after his retirement, when he became consulting surgeon, he remained a governor of the hospital. He was fair-minded, patient in listening to argument, and clear-headed. These qualities were conspicuous not only in the medical committees over which he presided but also in ordinary social intercourse. His generosity was remarkable—for example, he gave to the hospital its first X ray installation. His critical attitude prevented him from being popular with all and sundry but gained respect and trust, and his post-graduate teaching was widely appreciated.

Mr. Edmunds had many hobbies. He was greatly interested in music, and found pleasure in the splendid collection of classical gramophone records which he had accumulated. His little book on "Sound and Rhythm" was largely inspired by his musical tastes. Colour photography was also a hobby. He used the Lumière process, and some may remember his demonstration, at the Royal Society of Medicine, of a fine series of photographs of the rashes of the infectious fevers. He retained to the last his interest in the Invalid Children's Aid Association. He took an active part in the selection of the sites of homes for children suffering from heart disease, and also in the establishment of the convalescent home of the association at Worthing, a place to which he was connected by family ties, and where death unexpectedly overtook him just before his return to Putney after a summer holiday. He was a loyal friend, widely read, a stimulating companion, and an excellent host.

JOHN O'DONNELL, M.B. R.U.I.

Dr. John O'Donnell died on Sept. 22nd at his home in Merrion-square, Dublin, after a long illness. He was 62 years of age. Born in County Donegal, he received his education at the Cecilia-street School of Medicine, Dublin, and took the medical degrees of the Royal University of Ireland. Having filled the office of resident physician in the Mater Misericordiæ Hospital he was appointed assistant physician, and subsequently visiting physician, remaining in the last-mentioned office to his death. In early life he suffered from a pulmonary infection, but appeared to make a

satisfactory recovery, and lived the life of a busy physician for the past 25 years with little disturbance as regards his health. He took a special professional interest in the disease which threatened himself, and his opinion as a consultant was constantly sought in connexion with diseases of the chest. He was an admirable teacher, clear, patient, and painstaking. He avoided all publicity, but he was held in great regard by his professional brethren. His elder brother, Cardinal O'Donnell, Archbishop of Armagh, died two years ago. Dr. O'Donnell leaves a widow and five daughters.

THE LATE SIR NEVILLE HOWSE.

Dr. LEWIS SMITH writes: "Sir Neville Howse died on Sept. 21st after a few weeks' illness in a London nursing home. In March he came over from Australia with his wife and three daughters for a long-promised holiday, and threw himself with characteristic zest into its enjoyment. He appeared in excellent health, and it was delightful to share his appreciation of an English summer. His untimely death comes as a sad blow to his many friends in this country and Australia.

"Howse possessed a dynamic personality. As a medical student of the London Hospital, his exceptional powers were early recognised by his fellows, and his nickname of 'Norter' (a contraction of 'Snorter,' meaning someone outstanding) is still remembered among the men of his day. I first met him in 1896 at the 'London,' on his return from nine years' work in New South Wales where he had built up a large practice. Within 12 months he passed the Primary and Final Examinations for the Fellowship of the Royal College of Surgeons, and was appointed house surgeon to Mr. Hurry Fenwick. As a hospital resident his energy and enthusiasm were unbounded, and a stimulus to his younger colleagues. Our hospital friendship never waned, and we remained in constant touch for 34 years.

"As a doctor he was a shrewd diagnostician with a strong bias towards surgery; he was a bold operator, and never forgot the patient in the disease. In the Army Medical Service his unusual powers of organisation and administration won rapid recognition; his decisions were quick and fearless, and he never shirked responsibility. His success as a statesman was, perhaps, his most phenomenal achievement. Howse was a comparatively poor speaker, whose actions spoke louder than his words. His vision and judgment were almost uncanny, and on a visit to Australia in 1928 it was astonishing to find the influential position the erstwhile doctor had attained in the political world.

"Neville Howse was indeed a remarkable figure. He possessed a colossal 'drive' and power of concentration, with a wonderful memory. He worked and played at high speed, and a game of fives, or a tussle over some knotty surgical problem with 'Norter' was something to remember. He hated slackers and never learned to suffer fools gladly. It pleased him to dissemble his enthusiasms under a gay, careless exterior and an extravagance of speech. At hospital few knew how often he read for hours before breakfast to give him time to appear unoccupied during the day. His personal charm, keenness, and love of sport made him a born leader of men. He was utterly fearless, always ready for any risk, and many are the stories of his bravery at the front, where he seemed to bear a charmed life. He was curiously modest, hated ostentation, worshipped efficiency, and despised social amenities. He was essentially a 'big' man, and in some ways a law unto himself; he rarely sought to please and did not always avoid the other fellow's corns. He was intensely patriotic, an Imperialist who loved Australia, the country of his adoption. A devoted parent, he believed strongly in the claims of family ties and the world will never know his many kindly charities. As a statesman, he had ever before him the advancement of medicine; the newly established College of Surgeons of Australia owes much to his efforts, and he was unwearied in sending young Dominion doctors to study in the Mother Country. Recent legislation for an Imperial post-graduate centre in London won his whole-hearted interest and support. Service and efficiency were his life ideals."

CORRESPONDENCE

A DANGEROUS PHANTASY.

To the Editor of THE LANCET.

SIR,—Some months ago a young woman was murdered as she was crossing a heath near London in company with her sister. The victim was attacked in broad daylight by a man who jumped from a clump of bushes and stabbed her with a large knife. The crime is of interest to the psychiatrist in that it was, apparently, motiveless; the murderer did not know the woman he killed and could give no reason for his act. But apart from the fact that we know that no act is unmotived, the point of special interest in the case, I venture to think, is that some months previously the man had given himself up to the police as the perpetrator of another murder in Reading, for which he was proved to have been in no way responsible.

An account appeared in the press a week or two ago of a boy of 17 who was charged with the murder of an unknown person, and released. He had informed the police that he had hit a boy on the head with a piece of iron and thrown him into a canal. The canal was dredged without result and the police received no news of the disappearance of a boy. In discharging the youth the chairman of the magistrates is reported to have said: "You have given the police a great deal of trouble. So far as we know, you are telling deliberate untruths. So we are very glad to get rid of you." This surprisingly casual method of dealing with the case would seem almost to be tempting providence. It is surely evident from the circumstances that the boy is abnormal, and that his mental condition is in need of investigation and treatment. I am aware that it is not an infrequent occurrence for people to give themselves up to the police for crimes with which they have only an imaginary connexion. The fact remains, however, that in some cases at least, the phantasy is not psychologically sufficient and leads later to deeds.

I am, Sir, yours faithfully,

FREDERICK DILLON.

Wimpole-street, W., Sept. 25th, 1930.

COG-WHEEL BREATHING.

To the Editor of THE LANCET.

SIR,—Dr. Adams apparently suggests that so-called cog-wheel breathing may, in certain cases of tuberculosis, be due to an increased conduction of the cardiac first sound through areas of congestion. I am grateful to him for his suggestion. In some cases of consolidation of lung or of mediastinal tumour the heart sounds can be heard plainly through the solid material, but personally I should doubt whether they would be audible over tuberculous lesions, unless the latter were gross or massive. Further, it should be possible to identify such sounds as cardiac sounds, rather than as breath sounds, by their lack of dependence on respiration. An aneurysmal dilatation of a vessel exposed in a tuberculous cavity might also produce a local murmur somewhat resembling cog-wheel breathing, but suggestions such as this and Dr. Adams's are difficult to prove and are not satisfactory explanations of "air-waves" as described in my article.

I am, Sir, yours faithfully,

G. T. HEBERT.

St. Thomas's Hospital, Sept. 29th, 1930.

LAXATIVES AND COLITIS.

To the Editor of THE LANCET.

SIR,—In opening a discussion at Winnipeg on functional disorders of the colon (see THE LANCET, Sept. 20th, p. 635), Dr. Edmund Spriggs gave an exposition of the modern conception that the habitual use of laxatives is a cause of catarrhal colitis, and that the medical remedy of election in ordinary cases of constipation is liquid paraffin. The practitioner's difficulties, however, are not solved by the adoption of this standpoint, for there are at least two objections to its use.

(1) Paraffin, being an indigestible insoluble hydrocarbon, must cause a thin film covering the absorptive mucous surfaces of the intestine, thereby interfering directly with the digestion and absorption of foodstuffs. Also it would similarly surround particles of food and again interfere with the mechanical approach to them of digestive juices—in both cases placing a considerable and certainly undesirable obstacle to nutrition. Indeed, there are said to be cases of wasting due to the use of paraffin, although I have myself not met with an example.

(2) It must be admitted that there are many individuals whom paraffin preparations do not suit, causing in them unpleasant gastric and intestinal disturbance, with or without achieving its desired object. This may take the form of repetition and nausea, audible gurglings, rumblings, frequent tenesmus and useless urgent calls to stool and deflation, discharge of inordinate amounts of foul-smelling gas, uncertainty as regards time of defæcation, the very emptying of too large a portion of the colon that Dr. Spriggs deplores as a frequent sequel of taking ordinary laxatives, subjective feelings of intestinal congestion, with physical lassitude—not to mention the usual complaint of seepage, and the necessity of carefully watching and adjusting the dose from day to day.

In these circumstances the practitioner does not feel great confidence in the efficacy or desirability of liquid paraffin. He knows from experience that the large bulk of patients who come to him complaining of constipation are made most comfortable by the use of the cascara group. He is now told on high authority that the regular use of these remedies—and some remedy is inevitable, constipation not being usually curable by diet and exercise—causes colitis. What is he to do? I should value suggestions on alternative remedies, of a harmless nature and yet efficient and confidence-giving.

I am, Sir, yours faithfully,

L. J. GREEN, M.R.C.S.

High-road, South Tottenham, N., Sept. 28th, 1930.

PRURITUS ANI ET VULVÆ.

To the Editor of THE LANCET.

SIR,—It surprised me to read Mr. Lockhart-Mummery's condemnation of the treatment of pruritus ani by X rays. I have so treated it since 1922 with success, and without any sign of cancer accruing from the treatment. This year I have treated three cases by X rays, high frequency spray from glass vacuum electrode, and ultra-violet rays. The X rays were applied on four occasions at intervals of ten days, and heavily filtered; the high frequency and ultra-violet rays three times weekly, with radiant heat to the vulva and anal region. The X rays were filtered through 4 mm. aluminium and 3/5ths B. tint sabouraud et noire pastille dose at 20 cm. target distance.

X ray workers are well aware that soft or long-wave rays were the cause of cancer in pioneer workers, but now, with suitable filtering, cancer is not likely to become a complication in the hands of experienced radiologists. The X ray treatment produces severe irritation for 48 hours, when the itching subsides. The vacuum electrode charged with a weak current and applied for 20 minutes, with a five-minute interval of rest, is very soothing. A hot-air douche will relieve the burning sensation complained of, and if followed by radiant heat from a 1500-watt tungsten lamp is much appreciated.

Intelligently applied, X rays should not induce cancer on the anal and vulvar regions.

I am, Sir, yours faithfully,

JOHN MCGINN,
Radiologist to Newport Infirmary; Hon. Consultant Electro-Therapeutist, Welsh Memorial.

Sept. 29th, 1930.

BENZYL-CINNAMATE.

To the Editor of THE LANCET.

SIR,—In their article in your issue of Sept. 13th (p. 576) on the treatment of pulmonary tuberculosis by benzyl-cinnamate, Drs. T. W. Wadsworth and J. T. Flanagan do not refer to previous work on this subject done in France, Belgium, and England, although they have adopted a method of dosage closely similar to the method at which I arrived after many years of experiment. Their recommendation not to use this product in renal disease does not accord with the published experience of myself, Cathelin and Brule, Tissot and Chaignon, and Gainsborough, using my own preparation.

I am, Sir, yours faithfully,

J. JACOBSON.

Paris, Sept. 22nd, 1930.

GOSPORT HOSPITAL.—The work of this institution has increased so rapidly of late that it is proposed to enlarge the wards and the administrative blocks. The cost, including a substantial addition to the endowment, is estimated at £15,000, towards which over £9000 is in hand.

PANEL AND CONTRACT PRACTICE

Health Insurance, Present and Future.

Mr. Arthur Greenwood, Minister of Health, addressing the annual gathering at Blackpool of the National Conference of Friendly Societies, said that in 1911 pessimists made certain that the Insurance Act was going to kill the friendly societies. As reported in the *National Insurance Gazette* of Sept. 27th, he continued:

"I should imagine it is true that you are stronger to-day than ever you were. That, I think, is the answer to those who believe that there cannot be harmonious coöperation, to the advantage of both sides, between the State and voluntary societies such as you represent. The whole community outside your own membership is under a very deep debt to gratitude for the services of the voluntary societies. Our whole structure of National Health Insurance is built up on the experience of the friendly societies.

"Without that experience, Mr. Lloyd George's original scheme would have been utterly impracticable, and you are not only the inspirers of that scheme; you are not only the movement which gave it its first background of experience; you are the movement that is making it possible to work that system to-day with a maximum of economy and with a maximum of result."

After dealing with the increase of sickness claims and the Cabinet's survey of social insurance, Mr. Greenwood remarked:

"If there is anybody in the country who thinks that, sooner or later, I am going to produce a grandiloquent measure that is going to cover the whole field of social provision in a final form, they might as well get it out of their minds, because a Bill of that kind would take the whole Parliamentary time, not of one session, but of three or four, or perhaps five sessions at the very least; but it is desirable that those of us who are interested in and working in this field of social activity should have a picture of what it is that we want to achieve.

"One of the great weaknesses, it seems to me, of very much of our public activity in the past has been that we have lived from hand to mouth, and from year to year, without any practical constructive vision in front of us, and without deliberately pursuing a goal, step by step. I am now requiring local authorities to sit down and look ahead for five years, and to visualise their needs for five years, and to plan on a five years' programme. It is desirable that we should have a clearly conceived goal, and that we should build towards it; and I hope that we may get out of the survey a better picture of the kind of England we ought to have, so far as social provision is concerned.

"The wise men of National Health Insurance, I believe in the days of the first Labour Government, pointed to two gaps in our health insurance scheme. I do not think we can regard as satisfactory one which stops short at a general practitioner's service—which does not provide specialist and consultant services. It is a torso of a scheme unless you can be certain that the insured person is going to have available all the best resources of medical knowledge and medical skill. The second is a very grave and serious problem to-day. We cannot defend the loss of 3000 mothers in childbirth every year. I make bold to say that we shall find that at least 60 per cent. of those deaths are avoidable. We cannot rest content until more methods are in operation to deal with the problem. Those are two problems, both of them involving finance, both of them involving protracted negotiations with the approved societies and the medical profession, negotiations that are bound to be protracted if the scheme is to work on sound lines."

The two problems, said Mr. Greenwood, left aside altogether the enormous question as to whether we should bring into the scheme people who are outside it, and the question whether the scale of benefits was as high as it ought to be. A comprehensive scheme would cost an enormous sum, and any such scheme could only be carried into effect on the basis of maximum agreement with and coöperation between all those concerned. "Our system of social insurance," he concluded, "is deeply grounded in the national life; it is rooted there and we cannot afford to scrap that great edifice which we have built up; we cannot afford to tear it down; we cannot afford to bring in new methods unless we have experience to guide us. On the contrary, I look forward to an insurance system which is far more intensive, far wider in its scope than the present system, far more effective in its operation, and which will lift from the back of the ordinary man and woman the fears against those vicissitudes which may come to any of us."

Subscriptions to Hospitals and Clinics.

About 140 approved societies and branches have adopted the arrangements under which they can, out of their disposable surpluses, make occasional subscriptions of an eleemosynary character to hospitals and charitable institutions. Such subscriptions or donations may not exceed in any one year an amount equivalent to twopence per member calculated on the membership as given in the valuation report. They must be in the nature of voluntary gifts, and cannot be made by way of payment for any specific benefit received by an individual member of the society. These payments are, of course, quite distinct from the payment made direct to insured members entitled to some particular additional benefit.

A further development under the new additional benefit relating to approved charitable institutions has been the establishment by the British Red Cross Society of the Peto-place clinic for rheumatism. Approved societies responded to the Society's appeal for funds for establishing such a clinic in London, and it is hoped that this central clinic will soon be encircled by subsidiary clinics in other areas. A low scale of charges for insured persons has been arranged, a full course of treatment costing not more than 25*s*. About one hundred approved societies and branches have included in their new schemes of additional benefits the particular benefit which will enable them to pay the costs of any of their members attending this clinic.

Additional Benefits under the National Scheme.

There was no material change last year in existing schemes of additional benefits, the net expenditure by approved societies on additional benefits being rather less than in the previous year. In some cases this may be the beneficial result arising from extensive treatment given in the past. That at all events is the view of the Minister of Health. The demand for dental benefit, however, shows in many instances an increase, caused possibly by the shortening of the waiting period for the benefit from the fifth to the third year of membership in an approved society. The net expenditure by approved societies in England on dental benefit was about £1,730,000, a reduction of 9 per cent. on that of the previous year. Expenditure on ophthalmic benefit amounted to nearly £280,000, a slight increase. Over £400,000 was spent on the remaining benefits.

Nearly 9000 inquiries and complaints relating to additional benefits were received by the Ministry from insured persons, most of them being in respect of dental benefit. As a consequence of the recognition and adoption by a large approved society (whose administration had been the subject of Departmental inquiry) of the standard scale of charges of the Dental Benefit Council, complaints from insured members ceased altogether, in contrast to the pre-

vious experience when complaints from members of that society had been continuous and numerous.

The Dental Benefit Council has submitted to the Insurance Joint Committee proposals for the establishment of a dental service and for the supervision of that service, and has recommended their embodiment in regulations to govern the administration of dental benefit by all approved societies. The proposals include a revised scale of fees for work of a specified standard, a specification of materials to be used in dental work, and the procedure to be followed by insured persons, approved societies, and dentists in relation to applications for dental benefit. The proposed new scale of fees, which was arrived at by agreement between the approved societies and dentists represented on the Council, is estimated to produce a reduction of about 7 per cent. on the scale hitherto in force. The Council has also submitted proposals for the method of settlement of disputes between societies and dentists, and for the establishment by the Minister of a disciplinary tribunal to deal with charges of breach of the conditions of service. The Council has had under consideration the establishment of one or more experimental dental clinics for the treatment of insured persons, and has produced a detailed scheme for the provision of an experimental clinic in London.

Increased Women's Claims in Wales.

Mr. John Rowland, Chairman of the Welsh Board of Health, in an address to the Association of Welsh Insurance Committees in session at Mold, said:

"It is clear from the regional medical officers' figures that societies are giving increased attention to women's claims, especially those of young married women, but they are not sufficiently alive to the necessity for giving special attention to claims where the cause of incapacity is such as should not usually result in a prolonged illness. I am afraid that societies do not refer cases sufficiently early to the regional medical officer. An improved sick visitation system would help in this direction. This feature, which has proved so helpful to the old friendly societies, is now not so prominent, but I venture to say that societies which still provide efficient sick visiting have far better valuation results than those which have now become more or less dependent on the regional medical officer system.

"I think that approved societies could exercise more discrimination and care in the selection of cases for the regional medical officers. Many cases have been referred to the regional medical officers which would never have been sent if the sick visiting system of the societies concerned functioned properly."

Proposed Extension of Service in Scotland.

The Edinburgh Burgh Insurance Committee has passed a resolution that the time is opportune for the extension of the domiciliary medical service administered by insurance committees; that such service should be made as comprehensive as possible; and that it should operate alongside of and be in complete coördination with the public health and similar services now under the control of local authorities. The Committee urges among other things:

(1) That the medical benefit available under the Health Insurance Acts should be extended to the dependants of insured persons;

(2) That facilities should be made available to persons of a financial status similar to those included within the compulsory classes of the insurance scheme for becoming insured as voluntary contributors;

(3) That those who are unable from age or infirmity or other good cause to contribute for the purpose of securing the benefits provided under the insurance scheme should be provided with medical benefit through the public assistance committees, and should receive treatment in the same manner as those whose financial position compels or enables them to insure;

(4) That to be effective and prevent overlapping, the service to be provided to the dependants and others before mentioned should be a domiciliary service given by the general practitioners in the area and administered in precisely the same manner as medical benefit under the Health Insurance Act is presently administered—namely, through insurance committees in association with panel and pharmaceutical committees.

Limitation of Right to Change Doctor.

The Joint Committee of Approved Societies states that it would be prepared to support an amendment of the regulations as regards change of doctor

(*a*) subject to the change operating at four quarterly periods during the year on not less than four weeks' previous notice being given by the insured person, and

(*b*) subject to the right to change without notice being retained by the insured person in the event of (i) change of residence by the insured, even if new address be within two miles radius of present doctor's surgery; (ii) death, or retirement of doctor, or transfer of doctor's practice; (iii) consent being given to change by present doctor.

The "Old Family Club" System.

Writing "at the sign of the lamp" in the *Birmingham Medical Review* for September, "F. G. L." recalls the resolution on the inclusion under the insurance service of the dependents of insured persons, carried by an overwhelming majority at the annual representative meeting of the British Medical Association, and asks: "But did our representatives really stay to think what actually it was they were voting for? It is just this: a revival of the old family club system under another name. Against that most of us older men have striven for years. The panel system as we know it is one thing: the universal family club system is something quite different; and no haggling concerning fees, improved financial conditions, anything of the sort, can get away from that very plain fact.

"There are many of us," he continues, "who have lively recollections of the family club system. An anxious and harassed mother would turn up on Monday morning with three or four or five children and a basket containing several bottles. She would not depart willingly until each of the bottles was filled. The same thing would happen on every other day of the week, not once, but many times. The doctor, anxious to get off on his round, would see to it that the bottles were filled; but how often did he, could he, afford the time to see that the bottles were filled efficiently; how often did he make sure that the bottles needed filling at all? It was a vicious system. It killed completely the enthusiasm of many a young doctor who, starting off filled with keenness, drifted and drifted with the tide, and landed up disillusioned, ineffective, hopeless. That is no fancy picture. We older folk have seen it over and over again."

He asks the representatives instead to imagine the doctor service of this country properly established and properly equipped. "Imagine," he says, "the service working in grouped teams of men, each put to do the work for which he is peculiarly fitted. Imagine the individual doctor freed from the dread of individual failure—through sickness, bad luck, inadequate capital, what you will. Imagine, above all, the sense of freedom which would come to every one of us if we were no longer the slaves of a crushingly individualistic system."

Censure by an Insurance Committee.

Another case of censuring a medical practitioner has recently occurred at Derby, where the Borough Insurance Committee has overruled the conclusions of the Medical Service Subcommittee. The allegation was that the practitioner had not given sufficient attention to the case of a panel patient who died of pulmonary tuberculosis. The subcommittee's finding was that "having regard to all the circumstances, the failure to visit did not warrant censure," but they agreed that the doctor should have shown more consideration; they recommended that no further action be taken. A member of the Insurance Committee, while protesting that he had the greatest respect for the impartiality of the chairman of the

subcommittee, suggested that the medical members of the subcommittee were "trying to whitewash" one of their fellow-practitioners. He moved a motion to censure the doctor, and the motion was carried; an amendment to reduce the remuneration by £5 was not carried, the clerk stating that the last word would rest with the Ministry of Health. This was a valuable reminder. There is no question that the medical profession, in taking its part in the National Health Insurance Act service, is more likey to obtain justice from a full inquiry before a Ministry of Health tribunal than from a popular debate by an insurance committee. It is regrettable that the good work done by medical service subcommittees should be depreciated by the attribution of improper motives.

MEDICAL NEWS

University of London.

Forthcoming Lectures.—Four lectures on the reticulo-endothelial system will be given at University College, Gower-street, by Dr. H. P. Gilding at 5 P.M. on Mondays, Oct. 13th, 20th, and 27th, and Nov. 3rd; and four lectures on metabolism of carbohydrates and fats will be given at King's College, Strand, by Mr. J. A. Hewitt, D.Sc., at 5 P.M. on Thursdays, Oct. 16th, 23rd, and 30th, and Nov. 6th.

University of Leeds.

At recent examinations the following candidates were successful:—

M.D.

I. Berenblum, Elsie G. M. Ford, Bessie Goodson, and D. Perk.

CH.M.

D. W. Currie.

FINAL EXAMINATION FOR M.B., CH.B.

Part I.—B. W. A. Fleming, L. Glick, F. C. Leach, N. W. Roberts, R. E. Tunbridge, and Lilian I. Walker.

Part II. (*New Regs.*).—G. M. Holliday, I. J. Keidan, J. Shernovitch,* and S. Silman.

Part III. (*New Regs.*).—G. M. Holliday, I. J. Keidan, J. Shernovitch, and S. Silman.

Part II. (*Old Regs.*).—B. S. Platt.*

Part III. (*Old Regs.*).—M. Goodman, J. N. Hill, G. Hirst, G. J. Marks, and B. S. Platt.

* Second-class Honours.

FINAL EXAMINATION FOR B.CH.D.

Elizabeth W. C. Irvine and B. Sleight.

FINAL EXAMINATION FOR L.D.S.

F. Brooke, C. W. Hayton, H. A. P. Roche, and A. O. Sutcliffe.

D.P.M.

J. J. Graham and G. C. Morris.

D.P.H.

Rosie B. Becker, E. J. S. Bonnett, A. R. Doyle, J. L. M. Wood, and Hester E. De C. Woodcock.

The West Riding panel practitioners' prize for proficiency in medicine was awarded to J. Shernovitch.

Courses on Nervous Disease.

At the National Hospital, Queen-square, a post-graduate course on Diseases of the Nervous System will be held from Oct. 6th to Nov. 28th. There will also be 12 clinical demonstrations, chiefly on Methods of Examination of the Nervous System, at noon on Tuesdays and Thursdays, and, if there are enough applicants, ten lectures on the Anatomy and Physiology of the Nervous System, at noon on Wednesdays and Fridays. Further information may be had from the Secretary of the hospital (Queen-square, London, W.C.1).

Contraception and Allied Questions.

A course of lectures on this subject has been arranged by the Royal Institute of Public Health and will be held at 37, Russell-square, London, W.C., at 4 P.M. on Thursdays from Oct. 9th to Dec. 11th. The lecturers will be the Rev. Herbert Gray, on Christian Civilisation and Contraception (Oct. 9th); Dr. Killick Millard on Contraception and the Medical Officer of Health (Oct. 16th); Mr. Alfred Goodman on Some Medico-Legal Aspects of Contraception (Oct. 23rd); Dr. C. P. Blacker on Sterilisation of the Unfit (Oct. 30th); Mrs. Marie Stopes, D.Sc., on the History and Theory of Contraceptive Technique (Nov. 6th), on Present-day Technique and Clinical Results in Contraception (Nov. 13th), and on Positive and Negative Control of Conception in its Various Technical Aspects (Dec. 11th); Dr. Maude Kerslake on Contraceptive Problems of Destitute or Injured Women (Nov. 20th); Mr. Harold Chapple, F.R.C.S., on Contraceptive Responsibilities of the Medical Practitioner (Nov. 27th); and Dr. F. J. McCann on Medical Arguments against Contraception (Dec. 4th). Admission to the lectures is free but is restricted to members of the medical profession and senior medical students.

Royal Medico-Psychological Association.

The Maudsley lecture will be given by Sir Henry McCardie (Mr. Justice McCardie) at the British Medical Association's House, in Tavistock-square, London, W.C., on Thursday, Nov. 20th, at 3 P.M. His subject will be Truth.

London Hospital Medical College.

The Schorstein Lecture will be delivered by Mr. H. S. Souttar, surgeon to the hospital, at 4.15 P.M. on Friday, Oct. 17th, in the Bearsted Clinical Theatre. His subject will be Radium in the Service of Surgery. Members of the profession are invited to attend.

Enlargement of Wembley Hospital.

This hospital was opened only two years ago, but the pressure upon it is already so considerable that it has been decided to enlarge it at a cost for the first portion of £10,000. The extensions will include 15 new beds, increased accommodation for the treatment of accidents, isolation and pathological wards, larger electrical and massage departments, a mortuary and a chapel.

Rebuilding of Middlesex Hospital.

The demolition of the remainder of the buildings is proceeding so rapidly that it is expected that the last vestige of the old building will have disappeared by the end of October, when excavations for the foundations of the new east wing will begin. The foundations of 150 years ago were only a few inches deep, and beams and floors were so seriously decayed that they crumbled upon removal. Very few of the old bricks could be got out whole.

Bretby Hall Orthopædic Hospital.

Lady Maud Baillie last week opened new open-air pavilions at the Derbyshire county institution which have been erected at a cost of £15,000. The hospital, which is established in the former seat of the Earl of Chesterfield, was opened in 1926 with accommodation for 50 patients; there are now 150. It was stated that 67 per cent. of the tuberculous patients discharged so far were classified as quiescent, 27 per cent. as improved, and 6 per cent. as not improved.

Industrial Settlement at Peamount Sanatorium.

Mr. James McNeill, Governor-General of the Irish Free State, inaugurated a new machinery shop at Peamount Sanatorium, Co. Dublin, last week, as the first step toward the establishment of an industrial settlement. It is the intention of the management to follow closely the lines on which the Papworth Village Settlement has been built up, and they have secured the assistance of Dr. P. C. Varrier-Jones as adviser. The Governor-General spoke of the great reduction in the death-rate from tuberculosis, the rate having fallen from 2·9 to 1·37 per 1000 in 25 years. The industrial settlement is intended as a memorial to the work and life of the late Sir William Thompson, for many years honorary secretary of Peamount Sanatorium.

Guild of St. Luke.

The Guild of St. Luke was founded 66 years ago by a few medical students, chiefly to meet their own religious needs. It now makes a wider appeal, and its membership is open to all students and practitioners of medicine, both men and women, who are members of the Church of England, the clergy of which are eligible as Clerical Associates. The Chapter meets in every month of each term, and a festival service is held yearly at St. Luke's tide. This year the service will be held in St. Paul's Cathedral, on Tuesday, Oct. 21st, at 8 P.M. Besides the parent Guild, there are a Women's Ward and a Hospital Students' Branch in London. There are also Provincial Wards in important Centres, and it is expected that many others will be established. Particulars of the objects and activities of the Guild can be obtained on application to the Secretary, Guild of St. Luke, King's College, Strand, W.C. 2.

Paying Patients at Sheffield.

The chairmen of the Sheffield voluntary hospitals are considering a proposal for the establishment of beds for paying patients.

Sittingbourne Memorial Hospital.

This hospital, which has cost £13,000, was formally opened recently by the Misses Garwood. The hospital has been given by Mrs. Garwood in memory of her parents.

An Australian Hospital Tax.

The Western Australian Budget, which has just been presented, includes a tax for hospital maintenance of three-halfpence in the pound, calculated to produce £192,000.

A Hospital Secretaryship.

For the secretaryship of Bishops Stortford Hospital, at a salary of £250 a year, there were over 700 applications. Mr. Harold Mannock, secretary of King's Lynn Hospital, was appointed.

THE Minister of Health has appointed Lieut.-Col. J. R. Lord, Medical Superintendent of Horton Mental Hospital, to be a member of the General Nursing Council for England and Wales.

THE Newcastle-on-Tyne Health Committee has recommended that Prof. Thomas Beattie be appointed medical director at the Newcastle General Hospital, and Mr. John Clay director of surgery.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
TUESDAY, Oct. 7th.—5.30 P.M., ORTHOPÆDICS. (Cases at 4.30 P.M.) Cases:—Mr. Paul Bernard Roth: Multiple Congenital Deformities. Fracture of Astragalus. Mr. Hope Carlton: Compression Fracture of the Sixth Cervical Vertebra. Mr. W. H. Ogilvie: Injury to the Brachial Plexus. Congenital Abnormalities of the Hands. Congenital Abnormalities of the Wrists. Mr. Harold Edwards: Tuberculous Knee in a Woman aged 31 with an Unusual X Ray Appearance.
THURSDAY.—8.30 P.M., NEUROLOGY. Presidential Address:—Mr. Leslie Paton: Optic Atrophies.
FRIDAY.—5.30 P.M., CLINICAL. (Cases at 4.30 P.M.) Cases:—Mr. Cecil P. G. Wakeley: Tuberculous Disease of the Sternum. Congenital Shortening of the Femur in a Child. Dr. M. A. Cassidy: Adrenal Tumour. Dr. F. Parkes Weber: Anæmic Type of Hæmolytic Jaundice without Familial History. Mr. Eric A. Crook: Branchial Fistula. Mr. Julian Taylor: Report on a Case of Carbolic Poisoning. Mr. Harold Edwards: Popliteal Aneurysm. Other cases will be shown. 8.30 P.M., OPHTHALMOLOGY. (Cases at 8 P.M.) Presidential Address by Mr. E. W. Brewerton. Papers:—Mr. Frank W. Law: Traumatic Zonular Cataract, with Illustrative Case. Mr. F. W. Edridge-Green: The Detection of Colour Blindness from a Practical Point of View. Cases will be shown.

BIOCHEMICAL SOCIETY.
SATURDAY, Oct. 4th.—3 P.M. (In the Biological Laboratory, Cambridge.) Communications:—E. L. Smith and V. Hazley: (*a*) Action of Antimony Trichloride with Cod-liver Oil and its Unsaponifiable Fraction. (*b*) A New Technique for the Antimony Trichloride Colour Test. B. C. Guha: Observations on the Newer Factors Necessary for the Normal Growth of the Rat. K. H. Coward, F. J. Dyer, K. M. Key, and B. J. E. Morgan: A Quantitative Method for the Biological Estimation of Vitamin A. B. Woolf: The Addition Compound Theory of Enzyme Action. M. Nierenstein, J. C. Pool, and N. V. Price: Pyrogallase, a New Enzyme. T. Moore: The Distribution of Vitamin A and Carotene in the Body of the Rat. B. H. E. Cadness and C. G. L. Wolf: Urinary Proteases. A. N. Drury and L. J. Harris: Vitamin B Deficiency in the Rat, Bradycardia as a Distinctive Feature. W. Ramsden: Denaturation of Proteins by Urea. R. P. Cook, J. B. S. Haldane, and L. W. Mapson: The Action of Carbon Monoxide on the Oxidation of Certain Substrates by *B. coli communis*. M. Stephenson and L. H. Stickland: Bacterial Reductions of Molecular Hydrogen. A. Patey and B. E. Holmes: Preliminary Observations of a Biochemical Nature on the Tumour-producing Filtrates from the Rous Sarcoma. D. R. P. Murray: The Inhibition of Esterases by Excess Substrate. Demonstrations:—R. P. Cook, J. B. S. Haldane, and L. W. Mapson: The Use of the Barcroft Manometer in Determining the Respiration of Tissues in the Presence of Mixtures of CO and O_2.

EUGENICS SOCIETY.
WEDNESDAY, OCT. 8th.—8.30 P.M.: (at the Rooms of the Linnean Society, Burlington House, W.), Quinquennial Health Assessments: (*a*) Unemployables, (*b*) National Health Insurance. Speakers: Mr. E. B. Turner, and others.

THE MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY
11, Chandos-street, Cavendish-square, W.
THURSDAY, Oct. 9th.—8.30 P.M., Dr. Woodcock: The Development of Individual Psychology in the Twentieth Century.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, Oct. 6th, to SATURDAY, Oct. 11th.—METROPOLITAN HOSPITAL, Kingsland-road, E. Special Course in Medicine, Surgery, and the Special Departments (all-day Course).—CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C. Intensive Clinical Course.—TROPICAL HOSPITAL, Gordon-street, W.C. Special Course for three weeks. All day.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. Special M.R.C.P. Lectures at 8.30 P.M. Tues.: Dr. L. J. Witts, Recent Work on the Liver. Fri.: Dr. L. J. Witts, Blood Diseases. Further particulars from the Fellowship of Medicine.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.
MONDAY, Oct. 6th.—10 A.M. to 1 P.M., Surgical Wards, Genito-Urinary Operations, Skin Department. 2 P.M., Operations, Surgical Wards, Medical, Surgical, Eye and Gynæcological Out-patients.
TUESDAY.—10 A.M. to 1 P.M., Medical Wards, Clinical Demonstration (Surgical Dental Department). 2 P.M., Operations, Medical, Surgical, and Throat Out-patients.
WEDNESDAY.—10 A.M. to 1 P.M., Medical and Surgical Wards, Children's Medical Out-patients. 2 P.M., Gynæcological and General Operations, Medical, Surgical, and Eye Out-patients.
THURSDAY.—10 A.M. to 1 P.M., Neurological Out-patients, Demonstration of Fractures. 2 P.M., Operations, Medical, Surgical, and Genito-Urinary Out-patients.
FRIDAY.—10 A.M. to 1 P.M., Medical Wards, Skin Department, Dental Department, Clinical Demonstration (Medical). 2 P.M., Operations, Medical, Surgical and Throat Out-patients.
SATURDAY.—10 A.M. to 1 P.M., Throat Operations, Bacterial Therapy Department, Medical Wards, Children's Medical and Surgical Out-patients.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, Oct. 6th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose, and Throat Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Throat, and Ear Clinics. Operations.
FRIDAY.—10.30 A.M.: Ear, Nose, and Throat Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Children's Diseases Clinics. Operations.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.
MONDAY, Oct. 6th.—3 P.M., Dr. Millais Culpin: Psychology—Nomenclature and Classification.

UNIVERSITY COLLEGE, Gower-street, W.C.
THURSDAY, Oct. 9th, and FRIDAY, Oct. 10th.—5.30 P.M., Prof. H. Spemann (Freiburg): Introduction to the Theory and Practice of Experimental Embryology.

ST. PAUL'S HOSPITAL, Endell-street, W.C.
WEDNESDAY, Oct. 8th.—4.30 P.M., Mr. H. P. Winsbury White: Diagnosis and Treatment of Retention of Urine in General Practice.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
MONDAY, Oct. 6th.—4 P.M., Prof. W. H. Park: Pneumonia. (1st Harben Lecture.)
TUESDAY.—4 P.M. (2nd Harben Lecture.)
WEDNESDAY.—4 P.M. (Last Harben Lecture.)
THURSDAY.—4 P.M., Rev. A. H. Gray: Christian Civilisation and Contraception.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
TUESDAY, Oct. 7th.—4.15 P.M., Mr. E. D. Telford: Osteitis Fibrosa.
FRIDAY.—4.15 P.M., Dr. J. F. Wilkinson: Pernicious Anæmia.

Appointments

ALSTEAD, S., L.R.C.P. Lond., M.R.C.S., has been appointed Junior Medical Officer, Little Bromwich Fever Hospital, Birmingham.
CRAWFORD, A. MUIR, M.D. Glasg., F.R.F.P.S.G., Physician in charge of Wards, Royal Infirmary, Glasgow.
JOHNS, A. WALLACE, L.R.C.P. Lond., M.R.C.S., Assistant Resident Medical Officer, City of London Maternity Hospital, City-road.
THOMPSON, E. R., M.B., Ch.B. Edin. to be Certifying Surgeon under the Factory and Workshop Acts for the Crewkerne District, Somerset.

Vacancies

For further information refer to the advertisement columns.

Alton, Hants, Lord Mayor Treloar Cripples' Hospital and College.—Taird Asst. Res. M.O. At rate of £150 to £200.

Auckland, New Zealand.—Sen. Asst. Pathologist. £750.

Bath, Royal United Hospital.—H.S. At rate of £200.

Belgrave Hospital for Children, 1, Clapham-road, S.W.—H. S. and Two H.P.'s. Each at rate of £100.

Birmingham, Dudley-road Hospital.—Jun. Asst. M.O.'s. Each at rate of £200.

Birmingham and Midland Eye Hospital, Church-street.—H.S. £110. Also Asst. S.

Birmingham, Selly Oak Hospital.—Part-time Radiologist. Also Part-time Dental Surgeon.

Bolingbroke Hospital, Wandsworth Common, S.W.—H.S. At rate of £120.

Brighton, Lady Chichester Hospital for Early Nervous Breakdowns. H.P. Also Jun. H.P. At rate of £100 and £50 respectively.

Brighton, New Sussex Hospital for Women and Children.—H.P. and H.S. Each £50.

Bristol Royal Infirmary, Cancer Research Dept.—Asst. to Pathological Laboratory. £400.

Burnley, Victoria Hospital.—H.P. At rate of £150.

Bury Infirmary, Lancashire.—Third H.S. At rate of £150.

Cambridge, Addenbrooke's Hospital.—Res. Anæsthetist and Emergency Officer. Also H.S. All at rate of £130.

Cheadle, Cheshire, Barnes Convalescent Hospital.—Res. M.O. £250.

Croydon County Borough.—Asst. M.O., &c. £600.

Derby County Borough.—Asst. School M.O.

Derby, Derbyshire Royal Infirmary.—H.P. £150.

Dreadnought Hospital, Greenwich.—Asst. Radiologist. 50 gns. Also Physician to Out-patients.

Dudley, Guest Hospital.—Asst. H.S. £160.

East Ham Memorial Hospital, Shrewsbury-road, E.—H. P. At rate of £150.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—Res. M.O. £200. Also H.S. At rate of £125.

Exeter Royal Devon and Exeter Hospital.—H.S. to Special Depts. At rate of £150.

Frimley Sanatorium.—Jun. H.P. At rate of £100.

Gloucester, Gloucestershire Royal Infirmary and Eye Institution.—Second H.S. At rate of £120.

Great Yarmouth General Hospital.—Jun. H.S. At rate of £140.

Hampstead General and North-West London Hospital, Haverstock-hill, N.W.—H.S. At rate of £100.

Hertford County Hospital.—Hon. Anæsthetist.

Hospital of St. John and St. Elizabeth, 60, Grove End-road, N.W. Asst. P. Also Res. H.S.

Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—H.P. £50 for six months. Also Res. M.O. £350.

Ipswich, East Suffolk and Ipswich Hospital.—Cas. O. £150.

Italian Hospital, Queen-square, W.C.—Hon. Asst. Gynæcologist.

Liphook, Hants, King George's Sanatorium for Sailors.—Asst. M.O. At rate of £200.

Liverpool Hahnemann Hospital, Hope-street.—H.S. At rate of £100.

Liverpool, Royal Children's Hospital.—Second Res. M.O. At rate of £120.

London Homœopathic Hospital, Great Ormond-street, and Queen-square, Bloomsbury, W.C.—Anæsthetist. £50.

Macclesfield General Infirmary.—H.S. At rate of £180.

Maidstone, Kent County Ophthalmic and Aural Hospital.—Hon. Ophth. S.

Manchester, Monsall Hospital for Infectious Diseases.—Jun. M.O. £350.

Manchester Royal Infirmary.—Surgical Officer to Out-Patients. £35.

Manchester, St. Mary's Hospitals.—Two H.S.'s. for Whitworth-street West Branch. Also two for Whitworth Park Hospital. Each at rate of £50.

Manchester and Salford Hospital for Skin Diseases.—H.S. At rate of £100.

Manchester, Withington Hospital, &c.—Asst. M.O. £350.

Metropolitan Hospital, Kingsland-road, E.—Sen. H.P. and S. Jun. H.P. and S., and Two Cas. O.'s. All at rate of £100. Also a Phys. and Surg.

Middlesbrough County Borough.—Two Asst. M.O.'s. Each £500.

Milford, Surrey, County Sanatorium.—2nd Asst. M.O. £400.

Ministry of Health.—Deputy Regional M.O. in connexion with National Health Insurance Medical Service. £800.

Newcastle-upon-Tyne, General Hospital.—Sen. H.P. £300.

North Middlesex Hospital, Edmonton, N.—Res. Asst. M.O. At rate of £200.

Nottingham Children's Hospital.—Res. H.P. At rate of £150.

Nottingham General Hospital.—Res. Cas. O. At rate of £150.

Oldham Royal Infirmary.—Two H.S.'s. Each at rate of £175.

Paddington Green Children's Hospital, W.—H.P. and H.S. Each £150.

Portsmouth, Royal Portsmouth Hospital.—3rd H.S. At rate of £130.

Plymouth, South Devon and East Cornwall Hospital.—H.S. At rate of £100. Pathological Lab. Asst. £4 weekly. Also Med. Reg.

Preston County Borough.—Asst. School M.O. £600.

Preston, High Carley Sanatorium, near Ulverston.—Temp. Asst. Tuber. M.O. At rate of £450.

Princess Louise Kensington Hospital for Children, St. Quintin-avenue, North Kensington, W.—H.P. At rate of £75.

Radium Institute, Riding House-street, W.—Clin. Asst. At rate of £300.

Reading, Royal Berkshire Hospital.—Cas.O. At rate of £150.

Richmond, Surrey, &c., Joint Isolation Hospital Committee, Hospital, Mogden.—Res. M.O. £350.

Rochdale Infirmary and Dispensary.—Sen. H.S. £250.

Royal Free Hospital, Gray's Inn-road, W.C.—Res. Cas. O. £150.

Sheffield Royal Hospital.—H.S. Also Ophth. H.S. Each at rate of £80.

St. John's Hospital, Lewisham.—H.P., H.S., and Cas. O. Each at rate of £100.

St. Pancras Metropolitan Borough.—Asst. M.O. £500.

Salford Royal Hospital.—Res. H.S. to Orthopædic Dept. At rate of £125.

Shrewsbury, Royal Salop Infirmary.—Res H.P. At rate of £160.

Southampton, Royal South Hants and Southampton Hospital.—Asst. H.S. At rate of £180. Also Hon. Dermatologist.

Southern Rhodesia Medical Service.—Two Asst. and Relieving Govt. M.O.'s. Each £500.

Stoke-on-Trent, City of.—Tuberculosis Officer. £750.

Sunderland, Durham County and Sunderland Eye Infirmary.—Two Ophth. Surgeons. Each £350.

Taunton and Somerset Hospital.—Sen. H.S. £150.

Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Hon. Med. Reg. Also Sen. Res. M.O. £250.

Walsall General Hospital.—H.S. and Cas. H.S. At rate of £150 and £120 respectively.

West Bromwich and District General Hospital.—H.P. At rate of £200.

Western Ophthalmic Hospital, Marylebone-road, N.W.—Chief Clin. Asst. 1 guinea per session.

West London Hospital, Hammersmith-road, W.—Hon. Ophth. S.

Westminster Hospital, Broad Sanctuary, S.W.—Wander Scholarship, &c. £250.

Winchester Royal Hampshire County Hospital.—Hon. Clin. Asst., for Out-Patient Dept.

Windsor, King Edward VII. Hospital.—Hon. Asst. Anæsthetist to Ear, Nose, and Throat Dept.

Woolwich and District War Memorial Hospital, Shooters Hill, S.E.—Res. M.O. £175. Also H.S. At rate of £100.

Workmen's Compensation Act, 1925.—Member of the Medical Board for Silicosis. £750.

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Manchester West Central (Lancashire).

The Home Secretary gives notice that he is considering the question of appointing a Medical Referee under the Workmen's Compensation Act for the Paisley District of the Sheriffdom of Renfrew and Bute. Application should reach the Private Secretary, Scottish Office, Whitehall, London, S.W., not later than Oct. 18th.

Births, Marriages, and Deaths

BIRTHS.

BROWN.—On Sept. 25th, the wife of Dr. A. Carnegie Brown, of a daughter.

HIGGS.—On Sept. 23rd, at Chester-place, Regent's Park, the wife of Sydney Limbery Higgs, F.R.C.S., of a daughter.

HUDDY.—On Sept. 15th, at a nursing home, the wife of Ernest C. H. Huddy, M.B., B.S.Lond., of a son.

JAMIESON.—On Sept. 22nd, at Ventnor Villas, Hove, the wife of A. M. Jamieson, M.B., Ch.B., Cranbrook, Kent, of a daughter.

KINNISON.—On Sept. 23rd, at Rosely, Arbroath, the wife of R. Norman Kinnison, M.B., Ch.B., of a son.

MARRIAGES.

BOLT—MILLER.—On Sept. 24th, at St. Peter's Church, Edinburgh, Richard Frank Bolt, M.R.C.S., L.R.C.P., Great Russell-street, London, to Louisa, youngest daughter of the late Mr. John Ashbridge Miller and Mrs. Ashbridge Miller, of Ventnor-terrace, Edinburgh.

DEIGHTON—REYNOLDS.—On Sept. 15th, at the British Consulate, Sao Paulo, Brazil, C. S. (Jerry) Deighton to Dorothy Kathleen Reynolds, M.R.C.S., L.R.C.P.

DE NAVASQUEZ—SAMUEL-CAVESTRI.—On Sept. 26th, in London, Count Sigiberto de Navasquez, M.B., to Sylvia, daughter of the late Philip P. Samuel and Mrs. Cavestri, of Grosvenor court, St. John's Wood.

THYNE—MACKENZIE.—On Sept. 16th, at St. Columba's Church, Pont-street, James Pattinson Thyne, M.R.C.S., L.R.C.P., to Jessie Sutherland, daughter of Mr. and the late Mrs. Mackenzie, Mid Clyth, Caithness.

WRIGLEY—SLATER.—On Sept. 23rd, at the Parish Church, Lambeth, Arthur Joseph Wrigley, M.D., F.R.C.S., to Ann, fourth daughter of Colonel Slater, C.M.G., and Mrs. Slater, of Holmses, Dunscar, Bolton.

DEATHS.

BRUNTON.—On Sept. 27th, at a nursing home in Margate, Walter Reyner Brunton, M.R.C.S., L.R.C.P., M.B., D.P.H., of Collingwood-terrace, Westgate-on-Sea, aged 63.

BURRELL.—On Sept. 23rd, suddenly, at Nassington, Edward Burrell, M.D., aged 87.

TYLECOTE.—On Sept. 22nd, at Mullion, South Cornwall, Charlotte Dora, beloved wife of Prof. Frank E. Tylecote, M.D., F.R.C.P.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

HOSPITAL LIBRARIES: CAMBRIDGE CONFERENCE.

(FROM A CORRESPONDENT.)

LIBRARIES for patients in hospital are developing apace, notably in Great Britain, Germany, Denmark, and America. They are based on the principle that the benefit and pleasure of reading is specially the right of the sick person. That a well-stocked library for patients should form part of the equipment of every hospital was the substance of the resolution passed at the Congress of the Royal Institute of Public Health last June, and the subject claimed a whole session at the conference of the Library Association held in Cambridge from Sept. 22nd to 27th, when papers were read by Miss P. Redmayne, hon. librarian of St. Thomas's Hospital; Miss Ostenfeld, assistant librarian at the Central Library, Odense, Denmark; Miss Perrie Jones, supervisor of institutional libraries, State Board of Control, St. Paul, Minnesota; and Miss Kathleen Jones, general secretary of the Division of Public Libraries, Boston, Mass. These papers covered a wide ground, including an account of such hospital libraries as now exist, the methods of obtaining books through the public libraries, the choice and training of hospital librarians, and the results observed amongst the patients when books are given out with understanding and discrimination.

SUITING THE BOOK TO THE PATIENT.

Miss Ostenfeld explained that gifts of books to hospitals, no matter how well selected, were not enough, except perhaps in the field of general fiction. As soon as patients wanted to follow a special line of reading, whether in fiction or non-fiction, the hospital library work could not depend entirely on gifts. Here the aid of the public library was needed. To many people the stay in hospital was the only time in their lives when they had a quiet time for reading, but this opportunity was often thwarted by the difficulty of procuring the right books. The work of suiting the book to the patient might be undertaken by a member of the hospital staff, but an outsider had a psychological advantage, and no sister or nurse would have time to know the contents of every book. The hospital librarian was therefore to be chosen from the staff of a public library or from voluntary workers with some library training. In this country the question of trained librarians has hardly been tackled. In Denmark certain of the staff of the public libraries act as hospital librarians so many days a week. If each large hospital could appoint one such chief librarian, he or she could be assisted by the necessary number of voluntary workers who should have some training in librarian's work. A short course of lectures, some given by a librarian, some by a member of the medical or nursing staff, would meet the case in the first instance. In Denmark the public library bears the expense of providing books, but the hospitals, which are all under State management, pay for the time it takes the trained librarian to visit the wards.

THE HOSPITAL LIBRARIAN.

There must, said Miss Kathleen Jones, be someone to make the necessary contact between books and patients; and she illustrated the importance of this personal contact by what happened in a Massachusetts city. Here the public library had for a couple of years made deposits of books only; interest was lukewarm, the books were not used enough to pay for the trouble of sending them. Last year the librarian decided to follow the example of other city libraries by sending to the hospital twice a week one of his most attractive assistants—a woman of poise, culture, and social instincts. She took books to the wards, talked about them with the patients, borrowed special books for certain patients. The circulation immediately doubled, then trebled, and from being indifferent the doctors and nurses became enthusiastic over the psychological effect of reading on the patients. Personal service, Miss Jones remarked, is what counts, but the librarian must have the ability to make social contacts with every class among patients, doctors, and nurses. She must have a broad knowledge of and catholic taste in books, which will enable her to fit books to people. She must have sufficient library experience to enable her to handle easily details of technique. This sets a standard which it will not be possible always to reach; the best we can do is to work towards it. In any case, the librarian should be under supervision either from the public library or from the responsible hospital agency.

PSYCHOLOGICAL ASPECT.

It has been written by E. F. Garesché that "The books in a well-chosen hospital library stand row upon row like phials in a pharmacy. These precious packages contain medicine for the mind, more keen, more cordial than the medicine for the body. If anyone is sad a book will cheer him; if anyone is dull and weary, a book will instruct him; if fretful, it will calm him; if rebellious, it will bring him peace. . . . There should be in every hospital a physician of the mind, a skilful student of books who will recommend to every patient the phials of sweet thoughts and cordial sentences best suited to his mental cure." It was on this psychological aspect of books that Miss Perrie Jones addressed the conference. She agreed with Dr. Ruhberg in thinking of books as an adjunct and help to the physician in securing definite results in solving a difficult problem. Individuals, she said, are continually striving against their environment, being forced constantly to reconcile and tone themselves to their surroundings. If their attitude is right they adjust themselves successfully to facts, accept life more or less philosophically, and go their way. Others are unable to accept conditions as they are, or to control the emotional conflicts that arise from the conditions in which they live; these people frequently take refuge in psychoneurosis. With this class Miss Jones has occasionally had success in using books as a therapeutic agent. The key to results in these problems is the ability to change or modify their attitude. It has been estimated that psychic elements constitute 65 per cent. of the suffering among patients. They are beset by various fears arising out of their affliction. Such fears are alleviated by confidence in the physician and the hospital staff, by beneficial results in treatment—including books. These books should be free from elements that arouse fear and apprehension relative to their trouble. They should be soothing and entertaining. War books are too depressing. Books of the outdoors and wide open spaces, such as Grey's novels and fishing stories, are valuable among male patients. But, Miss Jones concluded, the use of books as a therapeutic agent is strictly an individual problem.

EDUCATIONAL VALUE.

In many instances special technical books have been procured for certain patients, enabling them to fill in a gap in their studies, or to pursue their hobbies further. The time spent in hospital may provide an opportunity for getting ahead with some study which is either essential or recreative. In both instances the psychological benefit is obvious. There is also the type of patient who, in the stress of ordinary life, has never discovered for himself a latent natural interest in natural history or poetry. A librarian of understanding can give these a new and lasting

interest in life. The value of occupational therapy is well recognised, while that of mental occupation is still waiting for its exponents in hospital practice. Progressive development in England may follow the adoption at the Cambridge congress of a comprehensive resolution suggesting methods of coöperation between public libraries, hospitals, and the Red Cross Hospital Library, with the appointment of a committee to work these out. A session is to be devoted to hospital library work on Nov. 21st at the forthcoming public health congress to be held in the Royal Agricultural Hall, tickets for which can be obtained from the organising secretary of the Red Cross Hospital Library, 48, Queen's-gardens, London, W. 2.

THE RED CROSS HOSPITAL LIBRARY.

The library at this address, financed by the Joint Council of the Order of St. John and the British Red Cross Society, was founded to supply books to hospitals for ex-Service men. In actual fact it is now sending books to over 2000 institutions, including general hospitals, sanatoriums, mental hospitals, convalescent homes, military and naval hospitals, and some British hospitals overseas. All the books are free gifts, non-returnable, and are renewed as requests come in. Special books are bought, as far as means permit, and voluntary workers installed as librarians. Clearly, however, something more is needed for the development of this work on anything like a national scale, possibly some form of coöperation between public libraries and the Red Cross Hospital Library. Voluntary hospitals might be prepared to make some contribution to a central library, sufficient to cover at least the expenses of voluntary librarians Then if local public libraries were to provide special books and take a share in the training of librarians there would be the nucleus of an organisation from which a larger scheme could grow.

POPULAR HEALTH EDUCATION IN GERMANY.

IN the current number of the *World's Health*, the quarterly journal of the League of Red Cross Societies, there is a paper on the methods and aims of popular health education in Germany by Prof. Adam, secretary-general of the Reich Committee on this subject. Popular health education seems to have proceeded apace during the last few years in Germany. The "health week" organised throughout Germany in 1926, with demonstrations in more than 2000 localities, yielded interesting results, the most important of which was the establishment of uniformity in the programme. In the past health education had been largely sporadic, without systematic collaboration between all the persons and institutions concerned. The Reich Committee has acted as a coördinating agency and clearing-house, and, representing as it now does various health organisations, public services, and insurance companies, it is able to eliminate overlapping. When the introduction of health lessons into school programmes was first mooted, the question as to whether the doctor or the teacher is best qualified to give such instruction gave rise to considerable discussion. The choice finally fell on the teacher, on the basis that even the most efficient doctors are apt to lack the gift for imparting knowledge to the young, and have not been trained for this purpose. It has been found a simple matter to put the new generation of teachers in a position to do this work, for hygiene has been introduced into the curriculum of the teachers' training colleges. The training of teachers already in office has proved far more difficult, and the committee, backed by the Government, has recently set up a large institution with the object of providing established school teachers with the necessary instruction. The committee has enlisted the press as an educational ally, for the German lay press, like that of most other civilised countries at the present time, has found popular health articles to be good copy. Most of the German newspapers publish health articles with advice as from the family doctor. The committee keeps in touch with the authors of these articles and with the provincial press. Every two or three weeks the committee issues 3400 copies of a press communiquè, which was formerly sent direct to the newspapers, but is now addressed to doctors, teachers, employees of relief organisations, and to others who undertake to give publicity to its contents. Health education by the cinema has proved less popular, the only plays in this field that have proved successful being two which deal with venereal disease. All the other health educational films have been withdrawn from circulation, cinemas refusing to exhibit them even when they were offered free of charge. The best, the short subsidiary films with a health moral, was one with the title, "Health without Tears," in which a tiny figure imparts enormously important advice, the drollness of the trick drawings being a stimulating contrast to the serious lessons they convey. All who have recently sojourned in Germany long enough to study the physique and bearing of the new generation will have been struck by its athletic healthiness, and no visitor to the international health exhibition, still being held in Dresden, can have come away from it without realising what a big part popular health education and physical culture are now playing in the Germany of to-day.

THE CARE OF MOTHER AND INFANT.

THE proprietors of Cow and Gate have provided a useful handbook[1] which touches on the main points in the diet and care of the expectant mother and on breast-feeding, artificial feeding, and infant feeding in the tropics; minor ailments of newly born and young children are included in a short survey, and some simple recipes are introduced into another chapter. The appendix contains references to some of the special products of the Cow and Gate factories, and the book is illustrated with many encouraging photographs of stout infants.

MEATH HOSPITAL.

INFORMATION about the Meath Hospital and County Dublin Infirmary was not received in time for inclusion in our Students' Number. The hospital contains 160 beds available for medical and surgical patients, special wards for children, and 40 beds for the study of continued and eruptive fevers. There is a large extern department in which the commoner ailments are brought under the notice of students and the minor operations of surgery are taught. The Dr. Joseph Smyth scholarship in medicine, value £50, is awarded bi-annually; a gold and a silver medal are given annually on the result of an examination in clinical medicine and surgery.

THE RABBIT IN HEALTH AND DISEASE.

UNDER this title Dr. J. B. McDougall, medical director of the British Legion village at Aylesford, has written a book[2] on the diseases of the domestic rabbit mainly for those who are interested in the breeding of the animals for fancy, fur, or meat. It will be useful to those who have to look after experimental animals. The descriptions of diseases, diagnosis, and treatment are clear and practical, more in the style of the medical man than the laboratory bacteriologist. "Smorl's disease" (for Schmorl) is a misprint (p. 76). One curious point is raised in the possibility that vent disease (*spirochætosis*) has some relation to the mutation known originally as "Castorrex" and now as "Rex"—not from the kingly appearance of the animals but from their having short, close fur, without long hairs, resembling that of the beaver (Castor).

[1] Motherhood: A Guide for Mothers. Third edition. Guildford: Cow and Gate, Limited. 1930. Pp. 163. 1*s*.
[2] Idle: Watmoughs. 1929. Pp. 106. 5*s*.

INVERNESS NORTHERN INFIRMARY.—The King has given his consent to this hospital being called hencefor "The Royal Northern Infirmary."

ADDRESSES AND ORIGINAL ARTICLES

THE SCIENCE OF MEDICINE.

An Address delivered at the Opening of the Banting Research Institute of the University of Toronto

BY LORD MOYNIHAN, K.C.M.G., C.B.,
PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

TO-DAY we open, we consecrate, a new Institute for Medical Research. We commemorate one of the greatest discoveries in the history of Medicine. The occasion seems not inappropriate for inquiry into some of the problems connected with research, and into the methods by which Medicine, in all its branches, has been and may still further be advanced.

Here we may gratefully recall the fact that Medicine is in truth the parent of all sciences, and that intellectual or technical assault upon every branch of human knowledge depends upon principles brought into existence and notably enlarged and advanced by those engaged in the practice and teaching of Medicine. It is true that for a thousand years or more the weapons of attack, lying idle, were allowed to rust; but on the revival of learning Medicine again took the lead, fostered the growth of the natural sciences, and afforded a means of livelihood to those engaged in their pursuit.

That the world in which we live is governed by laws, that man formulates these laws after close observation of phenomena and the brooding of his mind upon them, and that by experiment the validity of these laws may be tested, this whole idea we owe to Greece whose debt, in turn, to Egypt was by no means inconsiderable. Science has been defined as the application of methods of observation, critical judgment, and experiment to the physical world.

The science of the Greeks was from first to last the child of Medicine. To Hippocrates, Father of Medicine, we owe the establishment of the inductive method of logic. By the application of his mind to diseases, their recognition, differentiation, and modes of cure he founded the principle that from a multitude of singular examples a general truth can be raised. The Father of Medicine was also the father of inductive logic.

To Galen, a speculative mind, we owe the deductive method, the method of trial by experiment, the procedure by which specific isolated questions are submitted individually for examination by tests applied for the moment to them alone, all that is extraneous being excluded. The method of Hippocrates deals with facts and phenomena already in existence, discovering them by observation, yet creating nothing. The method of Galen creates facts as it needs them, in illimitable numbers and of endless variety.

Observation and Inference.

The method of observation, the Hippocratic method, is in the development of mental processes necessarily the first to be acquired and applied. It has, however, difficulties and perplexities which become more clearly realised as experience grows. In the first place apperception keen enough to recognise truth free from error, and to range it, for comparison or coördination, alongside other truths, is one of the rarest qualities. Momentary lack of attention, of concentration, of interest; prejudices which come from alien experience, credulity, or personal desire; confusion which follows from comparisons made almost or quite unconsciously, all tend to blur the image or derange the thought of the observer. The simplest of tests will confirm this view.

In making observations, therefore, to act safely we must proceed according to some method. And method implies both appraisement and selection, "picking out" among a multitude of things to be observed. What, then, shall govern selection? Observers will not agree upon the answer. Some will suggest that the fact or phenomenon first to be selected shall be that which occurs oftenest and, therefore, appears simplest because minds are used to it, or that which, they judge, is most important because of its effect, or supposed effect, upon the problem under consideration; or, again, that which to the observer is found to be the most "interesting," for reasons which lie deep in his conscious or subconscious mind. When a complex problem is repeatedly examined, the observer, as Poincaré has pointed out, is at first concerned with resemblances among facts; of these, however, the mind may at last grow weary. It is differences, then, rather than resemblances which hold the attention, and receive undue prominence in continued observation. Our purpose is, however, not so much to discover resemblances and differences, as the similarities under apparent discrepancies, leading at last to fruitful classification.

The making of observations is then by no means a random or simple procedure. It is governed by a number of factors, some of which are an integral part of the problem itself, whereas others are a property of the observing mind. Herein lies one of the difficulties inherent in the Science of Medicine. In other sciences the phenomena presented for observation are pure; in Medicine they are rarely unaffected by their passage through the medium of the patient's mind, which seeks to interpret, or unwittingly interposes a veil of obscurity. The observer is then confronted not with phenomena as they really exist, but with impure phenomena in varying degree, adulterated by the mind or affected by the will or temperament of the patient. And to an extent which varies in different individuals and in the same individual on different occasions the observing mind, too, may have its perception deflected and its judgment warped by variations in the working of its own mechanisms. This is perhaps more often the case than in any other science, sociology alone excepted. The fallacies of the observer's mind no less than the distortion of phenomena to be studied must in both be excluded. But because the raw materials for investigation are infinitely complex, impure or apparently incommensurable, no clinician, still less philosopher or psycho-analyst, would admit that these impurities and intricacies cannot be detected and unravelled, or that it is impossible to take a purely objective view of all phenomena, and formulate general principles from them. We can, however, never be indifferent to the fact that the contributions of the mind of the individual whose phenomena are submitted to objective study may have an important value. In that which each man thinks he observes is something of himself.

It would accordingly seem to be the clear, indeed the paramount, duty of the teachers of Medicine to inculcate the virtues and to instruct in the methods of

observation as the primary faculty required in students, They should erect a monument to Zadig as their patron saint. Practice in observation surely confers aptitude, and though an intuitive faculty is beyond doubt a property of many minds, experience which has conferred facility is often regarded as intuition; may, indeed, in practice be indistinguishable from it. After the facts have been freed from contamination and accurately observed they must be collected, their exact individual values appraised, contrasts or comparisons made, and the strict relation of each fact to others alongside it laid bare, uniformities revealed, harmonies discovered, and coördinations suggested. In this way alone can what is dark become illumined. Blank observation of phenomena is not enough; the mind must not merely apprehend phenomena, but must also as it were play with them; by analogy creating suppositions or forming notions with regard to them, making tentative new arrangements, and drawing inferences from them. Hypotheses must be freely made and tested by further controlling observations or by experiment. As a kaleidoscope rearranges its fragments of coloured glass into new patterns, so must the mind by memory, imagination, reasoned judgment and unreasoning guesswork throw phenomena into every possible association with each other in the hope that in this way or that truth may come into view. Ideas must be encouraged to arrange themselves and to shape themselves anew in the observer's mind; yet no idea may be accepted which cannot be controlled by observation and experiment.

COMPLEXITY OF DISEASE.

The difficulties of the method of induction in Medicine are in part due to the fact that it is inevitably imperfect. Not all cases can at all times be submitted to observation; not all cases present at any one time the same objective features; conditions which present the same physical features, or functional aberrations, or which disclose the same, or approximately the same, sequence of events, do not always affect the bodies of those whose minds are similarly attuned to their disorders. Diseases recognised, let us say, by change of structure, by disturbance of function, or by onset of infection present a pageant in which innumerable individual phenomena take part. Not every example of a particular disease will bring forward the same evidences of organic or functional change or elicit the same mental reaction. The complexity inherent in all biological phenomena is seen here also. If, to take a crude illustration, the "symptoms and signs" possible in a given malady made a total of 100, each bearing its own number, it may be that only some 20 or 30 or 60 or 80 of the possible units of evidence are adduced in any one case of that malady; symptoms and signs bearing numbers in the thirties or in the nineties, we will say, may be omitted; or all those in the 40 or in the 70 group may together be wanting, yet the intuitive or well-trained mind may, by its sensitiveness to the problem, recognise with conviction, perhaps not communicable to others, the existence of that organic or functional change by which the patient is affected. Such a mind is more likely than the average to be free from bias, to be able judiciously to select fair samples from the total number of phenomena presented in an individual case or requiring to be considered in long series of cases. Such a mind, too, is apt to be more sensitive to the reactions of disease upon the temperament, habits, and so forth of the patient. Conclusions resulting from observation in relation to diagnosis are therefore rarely, if ever, unassailable, nor are they by any means impregnable in connexion with the discovery of causal relations. Events in Medicine, as elsewhere, are rarely dependent upon a solitary cause, and Medicine is perhaps distinguished from all other sciences, not only by the number and interaction of possible causes, but by the remoteness, apparent irrelevancy, and obscurity of causes, whether immediate or proximate.

Induction is, therefore, the method by which all the materials of knowledge are brought to an assize of the mind, all the manifold apparatus of the mind set to work upon them, all analyses and ultimate syntheses carried out, and occasions provided for the submission of the results so obtained to the method of deduction. Through observation and its auxiliary properties clarity, order and a singular felicity and coherence of all parts become apparent in a problem at first inchoate and bewildering.

The Galenic Method.

Now arises a fresh labour of infinite difficulty, the discovery of the soul behind the facts reclaimed; and here the Galenic becomes ancillary to the Hippocratic method, or may even dominate it.

The method of Hippocrates which I have just considered implies the observation of phenomena, of symptoms and of signs, in the condition in which they present themselves, unaffected by any control exerted by the investigator. The Galenic or experimental method depends upon the observation of conditions after specific influence has been directly and consciously exerted upon them by the investigator. Control is the essence of the difference in method. The Hippocratic method surveying a large field attempts to discover similarities, uniformities or discordances, to make comparisons and establish classifications through perception of common attributes, to reason from these, and so to establish general laws. The Galenic method sets up its own inquiries, reducing them in each individual example to the simplest terms in order to obtain an unequivocal reply. The mental qualities required in the investigator are those which the trained observer in the Hippocratic method possesses; although, owing to the comparative simplicity of the arranged inquiry, the same high demand is not always made upon them after experiments begin. In the devising of apt experiment the highest qualities of imagination find abundant opportunity. In both methods analysis and synthesis are necessary. While in the method of observation analysis predominates, it is in the methods of experiment that the isolated truths are disclosed which must lend themselves to synthesis. The act of comparing one observation with another requires analysis in greater degree than synthesis for its effective working.

Hominal and Animal Experiment.

Animal research by the Galenic method has high value, but strict limitations. For its perfect application the clinical or other problem which it is desired to resolve must be submitted to minute analysis. Every item so isolated may be the subject of a specific test by experiment; the answer obtained is then ripe for coördination with others similarly gained, in a synthesis which may contribute a significant or decisive comment upon, or a full explanation of, the original complex clinical or other problem. But regard must always be paid to the impossibility of translating in every case, or under all conditions, the animal experiment into terms strictly applicable to man. The material of the human body is neither the same, nor subject to the same influences, as that

of animals nearest to man; similar functions are not wholly discharged by precisely similar mechanisms; the pressure of environment is not comparable in the two cases; and above all the mind of man is infinitely complex in comparison with that of the most intelligent of animals. Other reservations are also necessary in respect of the validity of animal experiment. The changes produced in experiments upon normal animals are relatively gross; the changes produced by disease in man, in the stages which should arouse our chief interest are minimal, and of so fine a texture that we cannot properly compare them with these coarser induced conditions. Care in the selection of animals for experiment in order to afford reasonable accuracy of comparison with man is extremely important. Royle's discovery of certain functions of the sympathetic nervous system of the goat was applicable to man, although when animals lower than goats were chosen no such agreement could be discovered. Yet, when the fullest allowances are made, the method remains one of extreme importance, of most fruitful results, of a value indeed second in accuracy and relevance only to that of direct hominal research itself, with which, whenever possible, it should be combined.

In earlier papers I suggested that experimental work, the Galenic method, carried out upon man in the act of treating his disease should be designated "direct research," and the method of investigation upon animals, in the elucidation of medical problems, "analogical research." For these W. Trotter suggests equally appropriate titles, *direct* experiment and *collateral* experiment. It would, I think, be still better to speak of *Hominal* and *Animal* experiment and research. Hominal research, when it is possible to conduct it during operations, or at other times, is the one unassailably accurate method of acquiring the knowledge we need. Its gifts to Medicine have been invaluable, perhaps equal in number, and certainly not inferior to those made in any other manner. Its importance is, however, not adequately recognised, even by those who have every opportunity of participation in it. The great danger with which surgery is to-day confronted is that its technical procedures are so easily learnt, so frequently practised, and so amply rewarded that men who regard medicine as a commercial career can live prosperous lives without contributing a single fresh thought, the slightest modification of any known procedure, or the establishment of any new method, to Science or Art. The ideal surgeon is not merely one who operates, who carries out, perhaps with brilliant skill an operation, the necessity for which, or the scope of which is determined by another. He possesses a mind to discover and examine all the clinical features of a case with competence not less than that of a physician and with responsibility far greater, and then acts, when so required, not only as a therapeutic agent, but as one engaged in hominal research. The safe judicious surgeon who applies technical skill, prudence, and fine judgment to the relief of human suffering adds greatly to the repute of our profession and to the happiness of the world.

Medicine a Pure Science.

The general position of Medicine in relation to Science, the question whether Medicine may be classed among the Sciences, has been variously assessed by different writers, many of whom speak with acknowledged authority. My late revered teacher and friend, Sir Clifford Allbutt, in whose study I write, once failed to do full justice to Medicine. In his essay "The New Birth of Medicine" he refers to its "enlargement from an art of observation and empiricism to an applied science" and "from a descriptive code of surface phenomena to the discovery of deeper affinities." Medicine, it is true, is an applied science, but it is applied only after it has been created. It would still be a science if it were never applied; a science of observation, critical discrimination, inference, of coördination and classification of facts which then lend themselves to verification by experiment. It differs from other sciences, assuredly, only by reason of its broader base, the extreme complexity of its numberless parts, and their manifold reactions upon each other. The quarrel as to whether Medicine is Science or Art has not yet subsided and will never be silenced until it is recognised that it may rank with both, with Science in its inquiries, with Art in its practice. Hippocrates, who made of Medicine a Science, spoke of it as "The Art" and he wrote "Where the love of man is there also is love of The Art." Medicine is the Science of the phenomena of disease, and incidentally of their removal or control. As Science, it ranks with biology, and for that reason offers the admittedly greater difficulties attaching to classifications among living things as compared with non-living matter. Apart from all else it is Science, as "pure" as any other science, mathematics alone excepted; it uses the same methods as all other sciences, methods indeed which it invented, but it is Science based upon many other sciences, and compounded of them all, with something added of its own authentic property and power. It must use the materials and the technical methods fashioned for it by other sciences, by physics and chemistry, both of which are necessary to physiology; in closing the gap between physiology and pathology (as between pharmacology and clinical medicine) it must accept the necessary aid of both. It must be regarded as biological; and its meanings and tendencies and some at least of its origins are explicable only by reference to psychology. If Freud created an "embryology of the mind," as Trotter profoundly observes, the play of mind upon Medicine is inseparable from any of its parts. When every concession as to the indispensable value of all these sciences to the study and advance of Medicine is made, there yet remains the truth that in its processes of inquiry and of deduction, and of all else, in making all possible use of every intellectual and technical assistance, Medicine pursues the path of scientific method in the same manner as any other science. Medicine for its elucidation and extension owes much to the method of observation, and more also in recent years to the method of experiment, both hominal and animal. The method of observation is at the moment out of fashion; the vast treasures of knowledge it has created for us, all the advances in medicine resulting from it, are disparaged and in danger of being forgotten. The method of experiment has captured the fancy of many members of our profession, and by reason of the precision of its facile results has created a degree of confidence which has never attached itself to clinical observation alone.

Experiment in Clinical Medicine.

Yet, in respect of collateral experiments directed to the solution of human problems of disease, it is only through accurate observation that the terms of experiment can be decided. When the experiment is concluded the results must again be submitted to scrutiny, so that they may be checked, accepted, or refuted by the supreme inquisitor, observation. Observation is, indeed, the first act in scientific

procedure, and it is the last act also. Experiment plays its most necessary part in intermediate stages, but is throughout subject both to initial direction and to final control, either to renunciation or to acceptance. Both methods are applied to matters of diagnosis, of classification, and of medical and surgical therapy. Of diagnosis a famous physician remarks that "a diagnostician goes into the wards with one chief goal in view—it is to place a label correctly, to say that here is a species or subspecies that someone has described, its name being this or that." Economy of effort with economy of thought, Mach taught, was the constant tendency and desire of science. But this method does not imply economy of effort but an almost dishonest escape from effort, and if so restricted a view is taken of the diagnostician's task, the discredit and perhaps disuse into which the methods of clinical observation appear to be falling, in the opinion and practice of experimenters, is not difficult to understand. The diagnostician must envisage a larger problem. He is primarily concerned with the recognition and qualitative determination of morbid phenomena. After hearing the anamnesis he investigates, by a series of tests made not only by ordinary methods of examination but by the use of most sensitive apparatus, such functional disturbances or structual changes as are manifest in any part. He finds it necessary to consider the reaction of these phenomena and of the family history and environment upon the mind, personality, and behaviour of the patient. And finally he seeks for causes, discovering the responsible lesion, its nature, and position. The laboratory provides on some occasions nothing, on many occasions much, on a few occasions almost all, that is required to make a diagnosis. The clinician cannot hope to be expert in all methods of examination there conducted. For these he must in some degree depend upon others. His task is to gather together and to integrate the items of knowledge culled from all sources, including himself, to sift and to arrange the evidence, giving strict proportional emphasis to each part, and in the end to pass judgment. In seeking causes and explanations of symptoms of disease, in the making and selection of relevant observations regarding ancestry, environment, personality, and organic or functional changes, and in reaching considered judgments, a scientific procedure of the most austere and arduous kind must be undertaken. The difference suggested between the diagnostician and the clinical searcher is illusory and untenable. To suppose that diagnosis is no more than the reference of a case to its proper class in the index of disease is to confuse the simple (not final) classifications of biology or botany, each having its well-defined and immutable features, with the most complex and as yet imperfectly defined groups of clinical and pathological phenomena which are called diseases, and often wrongly regarded as "entities." To affix a label to a case, to christen it with any name, is not to understand it or to solve its problems or to indicate the appropriate methods of treatment. Diagnosis is, however, only the beginning, not the end, of the matter. The diagnostician does not, therefore, rest content with placing a label, for labels enough could never be printed. So restricted a view in regard to his duty as that I have quoted is incomprehensible.

As applied science Medicine lends itself to the method of *direct* experiment far less readily than perhaps any science. Sir William Jenner regarded the administration of every dose of every drug in the nature of experiment; that is the right view. And so it is with every operation. That the drug to be given, or the operation to be performed, has been tried on numberless occasions, with variable results, emphasises the need for regarding every occasion of such undertakings as an individual adventure to be closely scrutinised, and its results in their particular degree correlated with the general state of the subject. That surgery is something more than therapeusis, that it is an instrument for research, that its application requires adjustment to every individual case, and that observation continued over long periods can alone determine the validity of the experiment, all this is apt to be overlooked. The very complexity of the problem renders it impossible to consider it alonside the methods of the laboratory. In hominal research we are able to control only a few specific features; the majority are altogether beyond our control, unapproachable and immutable. The experiment and subsequent observation make, therefore, a more exacting and a more prolonged demand upon an observer than do the procedures of the laboratory, where isolated questions are submitted one by one for answer. Hominal research would, however, gain inestimably if the exact methods of the physiologist, in respect of records and their complete analysis, were strictly applied.

The assertion made by Sir Thomas Lewis that clinicians have a "less rigid standard of truthfulness than physiologists," is, nevertheless, a little incautious. It is perhaps forgotten that matters upon which the physiologist passes an opinion, the isolation of one incident for purposeful investigation, the planning of the collateral experiment, the nature of the question asked, and so forth, are all matters which, by comparison with clinical inquiry, are extremely simple. The solitary question posed by the physiologist is answered "yea" or "nay," the answer being conditioned by the power of the chosen animal to reply.

Present Remoteness of Physiological Research.

It is for many reasons a matter of serious concern to Medicine that physiologists have so much neglected hominal research. The primary explanation for this is to be found in that unhappy cleavage between descriptive anatomy and functional anatomy (physiology) which was made a century ago by Sharpey. A knowledge of structural anatomy is important, indeed indispensable to physician and surgeon alike, though none can deny that the teaching of this subject has become too precise and concerned with details too minute for the needs of ordinary medical practice. Nevertheless, when the surgeon requires special knowledge of any particular organ, the most advanced text-book may fail him and he is then compelled to make his own investigations into normal or aberrant details of structure. For physiology, however, the severance was an immediate and immense advantage. The Galenic method with its experimental basis naturally proved attractive to many eager minds. The charm of devising new experiments, the creation of new knowledge, the delight of intellectual adventure, the further problems raised on all sides were a source of endless interest and encouragement to minds seeking novelty, and quick to follow new thoughts to their conclusion. But, little by little and insidiously, investigators wandered away and away from interest in man, and the science of hominal physiology was more and more neglected. Physiology has, indeed, almost ceased to be the old physiology which concerned itself with the normal and adnormal functions of man. The great majority of investigators,

many of them among the ablest minds in our profession, have lost by degrees their contact with, or direct interest in, biology, and now the science of physiology is hardly entitled to the name it bears. It is an amalgam of biophysics and biochemistry. Is it not time that physiologists rediscovered an interest in man? Man's body is accessible to their inquiries not only in conditions of health, but also in conditions of incipient deviation from health as yet unrecognisable by the cruder methods of day-to-day clinical Medicine. The very earliest departures from normality are more likely to be recognised by those familiar with the normal than by those acquainted only with advanced disease; by physiologists, or those with training and discipline in laboratory methods, that is, rather than by pathologists. The gap between physiology and pathology is artificial, neither to the liking of clinicians nor to the advantage of progressive Medicine. Physiologists are justly proud of the great conquests of knowledge which lie to their credit since their science developed independent existence; and English physiologists have pride of place in many discoveries in recent years. But their aloofness from Medicine has yearly become more obvious; their discoveries of less value to the clinician; their science, indeed, is playing truant. If, for example, we read a standard text-book on physiology we may see a not inconsiderable proportion, say one-fourth or one-fifth, devoted to a discussion of the physiology of muscle. In any text-book of Medicine or Surgery how many pages deal with the injuries or diseases of muscle? The work of physiologists is doubtless of high scientific interest; but a large part of it has, as yet, little clinical importance. And the pity of it lies in the grievous neglect by highly competent scientific men, of the problems which physicians and surgeons are eagerly seeking the aid of the physiologist to solve.

Ignorance of Disorder of Function.

At present our further advance is restrained for lack of knowledge which only the physiologist can obtain or impart. In Surgery this is particularly distressing.

During the last 30 years the advances in Surgery have been considerable. Lister placed in our hands a potent weapon of which use was made to study the "pathology of the living" and to devise, and through many contributors from all nations to improve, operations for the relief of structural diseases. The anatomical training which all surgeons had received was of advantage in enabling them to conceive the new operations then required. In this direction, however, in meeting organic changes by appropriate methods, little remains to be done. Surgery is now advancing in new directions and is seeking to discover methods of dealing with disorders of function, rather than to repair disorders of structure. In this advance Surgery must call upon its allies for all possible help, and the needs of Medicine appear no less urgent. New inquiries relevant to our immediate necessities must be undertaken and it is the physiologists who must help us. Their old knowledge is not adequate; new knowledge must be created or new applications and new interpretations of old knowledge suggested; the investigations must in part at least be conducted upon man. Just as physicians, to use Sir William Osler's phrase, were "caught napping" by surgeons who asserted the frequency, and created or amplified our acquaintance with the symptoms of gastric and duodenal ulcer, and of cholelithiasis, so the physiologists have similarly had their somnolence proclaimed by the researches of Royle and Hunter, Wade of Sydney, Robertson of Toronto, Judd, Adson, Learmonth and others, as to the sympathetic nervous system and its influence upon maladies of men so diverse as Raynaud's disease, Hirschsprung's disease, endarteritis obliterans, and retinitis pigmentosa. Learmonth's recent investigations carry the possibilities of helpful or remedial surgery still further. The lack of interest in hominal physiology is deplorable, and inasmuch as it is crippling the advance of surgery it should no longer continue. Advances in Medicine seem most likely to be concerned in the near future with ductless glands, with the sympathetic nervous system, and with problems of immunity and virus research. It is imperatively necessary that physiologists, physicians, and surgeons should coöperate in the application of laboratory knowledge of these subjects to clinical problems. There is urgent need of intellectual symbiosis. If physiology is the science of function, we shall agree with Prof. W. E. Dixon when he says "Disease means the unusual functioning of tissues which may be the result of accident, hereditary weakness, or parasitic organisms. Generally it is wrong to speak of this as malfunctioning; the unusual functioning is physiological and perhaps the best for the organism under the unusual conditions." This statement is true and of deepest significance. For reasons already mentioned I believe it to be essential to the progress of Medicine that physiologists should interest themselves not only in normal functions, but in those "near normal," or, as I prefer to call them, adnormal functions, which indicate the earliest movement towards disease. Surely the greatest need in medicine to-day is the power of recognising early pathological changes, or the onset of functional aberrations, before grave or irremedial conditions have, perhaps tardily, developed. Such power lies in the methods of physiology or paraphysiology; by them alone the great gap between our knowledge of normal animal physiology (if it is in truth normal) and of early pathological changes in man would be narrowed or closed.

"Is there a Science of Experimental Medicine?"

The duty of undertaking, or of inspiring and financing these most necessary inquiries would seem to lie with our Medical Research Council, who have approximately £500 to spend on research on every working day in the year. In the last report of this Council the question is asked, "Is there a science of experimental medicine of which the actual material for study is the human patient? Or is scientific work by the physician or surgeon limited to the application in his art of scientific results worked out elsewhere in the laboratory, and delivered to him for use?" Are these questions for a research council subsidised by the State to ask, or those to which it should already have supplied the answer? If there were not a science of experimental Medicine, there could at least be established as a most necessary preliminary a school of experimental hominal physiology or paraphysiology, so that fundamental problems of man's functional life could be investigated as never before. The latter part of these questions appears to show a measure of unfamiliarity with the position of clinical Medicine and of clinical surgery to-day. I have no authority, physician though I am, to speak of medicine, yet the assumption, inherent in the question, that ready-made weapons are fashioned in the laboratory and handed over with magisterial authority to the physician who humbly

acquiesces in their prescribed use, is too amusing for serious discussion. With Surgery, however, I have some acquaintance. The most notable and revolutionary change which, thanks to Lister, has come over Surgery in the last 30 or 40 years is the creation of completely new knowledge of visceral disorders. The study of visceral diseases as a part of the disturbing and provoking activities of surgeons has helped us to rewrite the clinical symptomatology of such conditions as gastric and duodenal ulcer; cholelithiasis, diseases of the intestinal canal, of the pelvic organs of the female, and of such splenic troubles as hæmolytic jaundice and splenic anæmia? Is this scientific work dependent upon observation and experiment alike? Are all these advances in knowledge gained by a science of Experimental Medicine of which the "actual material for study" was the human patient? If so, what part has the laboratory taken in the creation either of this new knowledge, or of that no less important practical knowledge which is concerned with the remedial treatment of these conditions? Has not the contribution of the laboratory to the surgery of the stomach, for example, been almost negligible when it has not been potentially dangerous because divergent from human experience and therefore inapplicable? Has the laboratory helped us appreciably in our acquisition of knowledge regarding cholelithiasis, its origins, multitudinous complications, destinies, or treatment? Has it materially helped to supply the knowledge we so urgently desire of hepatic physiology in its insidious transmutation into hepatic pathology? The observations of Graham of St. Louis, and of my colleague, E. R. Flint, have shown that in cholecystitis and in other abdominal diseases requiring surgical treatment there is almost invariably hepatitis. In this observation may lie a clue to many things. What has physiology to tell us of hepatic functions or of the "near normal" liver that may help us with this problem? What interest has it shown in an observation so suggestive?

Physiology Lagging Behind.

Physiology in its relevance to hominal problems is not, as Sir Thomas Lewis following Sir Clifford Allbutt suggests, out-stripping medicine, but is lagging too far behind, concerned too much with the laboratory and with mice, too little with hospital wards and with men. We, the clinicians, have gained gigantic intellectual victories by the acquisition of new knowledge, and of a new vision, with barely recognisable assistance from the laboratory. In all these matters physiology has seeemed so aloof, or been so laggard, that our further advances are checked for lack of the particular knowledge which this science alone can now supply. Let no one for a moment suppose that I am critical of the methods or results of collateral experiment, or of their great value in illustrating and elucidating the problems of hominal disease. My grief is that laboratory workers do not fully realise the immense opportunities of combining animal with hominal research which are in no other way available to them, and which now lie at their hand. Physiological and other forms of research are drifting further and further away from clinical medicine, to the very real disadvantage of both. And one cannot help but observe a sense of superiority in claims made for the laboratory, and in assertions of the infallible rectitude of its results wherever they clash, or appear to clash, with the sober if in some degree intuitive judgments of the clinician. Yet it is in the application of the methods of both Hippocrates and Galen, in observation, critical judgment, and discrimination followed by hominal and animal experiment, that we shall most surely attain to greater and ever greater knowledge of the maladies of men, and so acquire power to conquer or subdue them. A new and most necessary impulse might, perhaps, have been given to hominal physiology and a new incentive to the development of both medicine and surgery along lines of adnormal physiology (paraphysiology) by the Medical Research Council. In the reconstruction of this body and in a wider conception of its duty may lie an opportunity for creating a new birth of British Medicine.

REMEDIES.

One remedy for the present remoteness of physio logists from clinical affairs would lie in an endeavour to develop and sustain their closer interest in human physiology, in the inaugural symptoms of disease, and in those incipient pathological changes which are correlated with them. Some constructive ideas of the highest importance long overdue might then issue from the laboratory and find a practical application in clinical work. The foundation of chairs of Human Physiology might well be the means of bringing together the workers in wards and in laboratories; the publication of a journal of Human Physiology, as suggested to me by Dr. Learmonth, of the Mayo Clinic, would be both helpful and inspiring. It is nothing less than disastrous that the knowledge of the sympathetic nervous system created by Gaskell and Langley should have remained so long without full application to the practice of Medicine. The work of Royle and Bennett has given a new vision to Medicine, has created new knowledge, and has resulted in the most consummate application of old knowledge to surgical problems. And it is, I think, no exaggeration to say that the results of their operative measures were at first received without enthusiasm, even with a rather supercilious condemnation by laboratory workers in physiology. We can surely do better in the future by bringing the labourers in the various fields of Medicine more closely together. It is surgeons who have begun to make the synthesis where Sharpey made the sharp division. In the Mayo Clinic with its annexe, the Institute of Experimental Medicine, where clinicians also work, this necessary fusion of interests is plainly, happily, and fruitfully seen at work. One of the fundamental purposes of the Banting Institute is to secure a close alliance between research and clinical Medicine.

Changes must be made, too, in the education of medical students. No one can pretend that this training is to-day entirely satisfactory. I said long ago that the purpose of education was not so much to provide a meal as to create an appetite. In Medicine, from preliminary subjects to the final round of clinical work, there is too much forced inculcation of text-book teaching or of rule-of-thumb tradition, and too little training in, or encouragement of, individual powers of observation. The fact that the method of Galen may be illustrated by daily work in wards or theatres passes almost unnoticed. So much learning has to be acquired in so short a time that the mind tends to become a storehouse rather than an observatory, and the student, always conscious of the exacting standards of imminent examinations, is concerned rather with acquisition than with discrimination. Fletcher Moulton used to speak of "the formula" for the acquisition and for the critical appreciation of learning. His formula implied the possession of a correct method of intellectual approach to new problems, not the master key to open new doors. It was based upon a knowledge of philosophy,

some acquaintance with which would be of inestimable advantage to students of Medicine. I should rejoice to see the Examination in "Logic and Psychology," restored to the London University, placed at the beginning rather than at the end of the series.

The suggestion has been made, in more quarters than one, that though the method of Hippocrates, of observation and of critical inquiry, and of classification, has rendered valuable service to Medicine in the past, the future advance of Medicine rests with the laboratory workers. *Nil sine laboratorio vita dedit mortalibus.* I have never consented to this opinion. I believe that the recent, so confident success of laboratory work owes much to the original impulse derived from clinical work, that when left to himself the laboratory worker has gone a little astray, and that, freed from the final need for clinical verification his efforts, admirable in themselves, have in no small degree been wasted so far as Medicine is concerned. Divorce of research from observation and of research worker from clinician appears imminent; its results will be tragic. The essential problem is so to arrange the work of hospitals that both geographically and spiritually the laboratory becomes a part of it. At present, routine examinations in the laboratory occupy all the time of the staff; the physician or surgeon receives a report or a series of reports upon one specimen or many submitted for examination. Meetings between clinicians and laboratory workers are not hourly, perhaps not even monthly; these men should be inseparable intellectual companions, and laboratory workers should more often seek their clue and find their inspiration in the suggestions of clinicians. With some necessary re-arrangement and curtailment of initial subjects of the student's curriculum, with anatomy simplified, shortened, made more relevant to the teaching of clinical subjects (with due recognition of the truth that it is a science concerned not only with what things are but also of what they do) the student would have more time to spend in the wards of such a combined unit of clinical and laboratory workers. He would acquire the "formula," he would realise that a capacity for clinical research which combines the methods of Hippocrates and of Galen is the essential quality he must acquire in his student days, and that all his professional life will then offer opportunities for gaining insight into the mysteries of incipient disease, of which to-day we know so little. The general practitioner, whose gifts to Scientific Medicine are considerable yet whose doom in the near future appears otherwise to be threatened, might in his way become a research worker in the one great field of Medicine which has found so few to explore it, that of the recognition, interpretation, and control of inaugural symptoms. Every physician and every surgeon would then be able to build his future career upon foundations which could never be shaken.

The Work of Banting.

The inauguration of the Banting Research Institute of the University of Toronto is for me one of the happiest duties of my whole life. This is a moment of high romance in a land of dreams come true. Dr. F. Banting, reading for the Primary Examination for the Fellowship of my College and still keeping his mind on problems of General Medicine, became possessed of the idea of extracting the hidden virtues of the islands of Langerhans, and of using them in the treatment of diabetes. As will so often happen with the dreamer of dreams he surrendered every other object to this quest. He came to Toronto, was allowed the use of the physiological laboratories, was helped by an assistant, Best, whose name is for ever linked with his own. The result of his labours, announced ten years ago, is now the common possession and the equal pride of all the nations of the world.

> "One man with a dream at pleasure
> Shall go forth and conquer a crown."

Banting has conquered, and to-day, as a gift from all mankind, he wears with so becoming humility the crown of immortality. In his honour we raise to-day this temple of Science.

Memorials are of many kinds. Some are graven in stone, some are cast in bronze, some are written in letters of gold upon the roll of honour which enshrines the names of the saviours of their Country. There is yet another memorial, born in the hearts of those from whom a heavy load of suffering and of sorrow has been lifted, and dedicated by them as an act of homage to a great deliverer. Take the journey of Autolycus and gaze down into the multitude of homes in which live the men and women and children of every nation, of every race, of every creed, from whom the cold hand of death has been turned aside by the skill of him whose services to humanity we commemorate to-day. Consider, too, that this is not the work of a moment nor even of one age, but that it will continue for ever. In the grateful hearts of those rescued from death and of those who spend their lives in the sacred ministry of healing the true memorial to Banting will be found. Is not his indeed a crown of immortality?

ADDISON'S DISEASE:
THE VALUE OF RADIOGRAPHY IN DIRECT DIAGNOSIS.

(WITH ILLUSTRATIONS ON PLATE.)

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THE diagnosis of Addison's disease is usually based on the recognition of the symptoms and physical signs that result from the destruction of the suprarenal glands. Pigmentation of the skin and mucous membranes, asthenia of the nervous and muscular systems, feeble action of the heart associated with a low blood pressure, gastro-intestinal disturbances in the form of anorexia, vomiting, and diarrhœa, are the most important group of symptoms associated with the condition. The pigmentation which forms the most characteristic feature of Addison's disease has been termed "suprarenal melasma" or "bronzed skin." Neusser,[1] however, states that pigmentation of the skin and mucous membranes is not an integral part of Addison's disease, and though of decided diagnostic significance, is not an essential feature. In the absence of pigmentation the diagnosis of the condition is often quite impossible; it is true that in the presence of some of the other cardinal symptoms already referred to a diagnosis of Addison's disease may be considered, but even then it may be closely simulated by many other diseases.

Even when pigmentation is present the diagnosis may be difficult. Pigmentation of the skin may be congenital or racial, it may be associated with abdominal disturbances such as the presence of tuberculous, malignant, or Hodgkin's glands, pregnancy, or visceroptosis. It occurs in certain cachectic conditions such as carcinoma, exophthalmic goitre,

malaria, and is often well marked in pellagra. Irritation of the skin from comedones or the presence of parasites (vagabond's disease) may produce marked melanodermia, whilst pigmentation may be well developed and generalised in certain cases of sclerodermia. In hæmochromatosis the distribution of the skin pigmentation may simulate that of Addison's disease. Arsenical and silver salts may produce marked skin pigmentation, and certain cases of chronic jaundice may give rise to difficulties in diagnosis.

Since tuberculosis of the suprarenal glands provides the commonest causative lesion in Addison's disease it is not uncommon to find evidence of tuberculosis elsewhere in the body, especially in the lungs. The various immunity and tuberculin tests have proved of little value as most of the patients have passed the age of puberty. Direct evidence of suprarenal involvement in a suspected case of Addison's disease is difficult to obtain. Severe lumbar pain, although occasionally a prominent feature, is usually absent. In the same way, although tenderness on deep pressure over the region of the suprarenal glands can sometimes be elicited, I have found this physical sign more often absent than present. The taking of a direct X ray picture of the diseased suprarenals would afford the most accurate evidence of suprarenal disease, and I have been fortunate to obtain such a picture from a typical case of Addison's disease who was recently under my care at the London Hospital. The photograph (fig. I. on Plate) was taken by Dr. M. H. Jupe, of the X Ray Department, London Hospital, who submitted the following report of the case :—

"Two areas, triangular in shape, showing uneven calcification are seen lying one on each side at the level of the first vertebra. On the right side the shadow of the right kidney is clearly seen, and at the upper pole is a cap-like shadow showing mottled areas of uneven calcification. On the left side, the shadow at the upper pole is less clearly defined, but is crescentic in shape and lies not only over the upper pole of the kidney, but extends down the medial surface almost to the hilum. The shape and position of these partially calcified bodies correspond with that of the suprarenal glands."

The Case Described.

The patient from whom this photograph was taken was a woman aged 20, of medium build, and engaged as a fur-coat liner. For 12 months she had been complaining of loss of weight (2 st.), poor appetite, and general weakness. For the past seven months she had noticed that her face and hands had been steadily getting browner. Amenorrhœa had been present for four months. For two months she had experienced nausea when waking in the morning and lately she had vomited a little after each meal. There had been no diarrhœa. Recently she had fainted on several occasions, and had felt very dizzy on getting up from a chair. She had been discharged from her work three weeks previously for alleged slackness in the carrying out of her duties.

Before the onset of the present illness she had always remained healthy. A slight cough which had been present for some time was unaccompanied by sputum. Her father had died of pulmonary tuberculosis at the age of 32 ; her mother and four sisters are healthy.

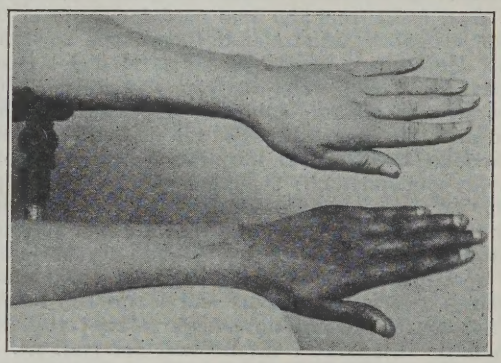
On examination she was found to be a moderately well-nourished and developed female appearing considerably older than her actual age. The dark brown pigmentation of the face gave her the appearance of a mulatto.

Pigmentation.—Generalised and uniform deep dark-brown pigmentation affecting the whole of the face, neck, hands, less marked on arms and axillæ. Accentuation of pigmentation in areolæ around the nipple in both breasts, and along the linea nigra. Localised areas of pigmentation at points of pressure over the vertebral spinous processes and in the epigastrium (corset pressure). Numerous small areas of darker pigmentation scattered irregularly over face, neck, and forearms. Bluish-brown areas of pigmentation were present on both upper and lower lips. Many dark-brown areas or patches of pigmentation were well seen on the buccal mucous membrane, being more prominent on the left than the right side. Several deep brown spots of pigment were present on the dorsum of the tongue in its anterior one-third. The distribution of the pigment on the hand is well seen in fig. II.

The pulse was small, feeble, and thready ; its rate varied between 80 and 100 per minute.

The blood pressure during the patient's stay in hospital (admitted May 29th and died June 8th, 1930) remained remarkably constant. The systolic blood pressure was

FIG. II.



Shows the pigmentation of the hand and arm in the case of Addison's disease described in the text, compared with the unpigmented hand and arm of a healthy girl of the same age.

85 mm. Hg and the diastolic 50 mm. Hg. On June 5th Dr. Otto Leyton confirmed this reading by means of the recording sphygmomanometer. The systolic blood pressure fell to 75 mm. Hg two days before death.

The heart sounds were clear but the first was weak and distant.

There was deficient movement and dullness on percussion over the upper part of the right lung ; the breath sounds over the upper lobe were bronchial in character. On the left side there was also some evidence of slighter changes. There were no adventitious sounds. X ray examination of the lungs disclosed fairly extensive tuberculous infiltration of both lungs, the changes being more marked on the right side (fig. III. on Plate). Distinct tenderness could be elicited posteriorly on deep pressure over the site of the suprarenals, but no mass could be felt by abdominal palpation.

The urine, which contained a slight trace of albumin, presented no other abnormality.

Examination of the nervous system revealed a pronounced lack of energy and general muscular weakness, but no other abnormality.

Blood examination showed 5,600,000 red cells per c.mm. The hæmoglobin was 76 per cent. and the colour-index 0·68. The leucocytes numbered 9640 per c.mm., of which 47 per cent. were neutrophils, 36 per cent. small lymphocytes, 8·5 per cent. large lymphocytes, 5·5 per cent. large hyaline cells, and 3 per cent. eosinophils. The blood-sugar was 0·1 per cent.

TREATMENT.

During the patient's stay in hospital she was kept in bed. The vomiting which was present was allayed but not altogether prevented by three minims of dilute hydrocyanic acid, along with ten grains of potassium bromide. One grain of ephedrine hydrochloride was given twice daily for a period of five days, but as it appeared to produce no beneficial effect on the blood pressure nor on the general condition of the patient it was discontinued. From June 5th one drachm of dried extract of whole suprarenal (Armour) was given three times a day. On June 8th the pulse became imperceptible and the patient collapsed rather suddenly and died. Unfortunately, consent for a post-mortem examination was refused.

Comment.

From a review of the literature it has been possible to find only one case where the presence of calcification of the suprarenals had been demonstrated by X ray examination. In 1914 Rolleston and Boyd [2] described a case where a skiagram of the renal area of a boy aged 12 years, who appeared to be suffering from Addison's disease, showed the presence of shadows due to a calcareous mass in the region of the twelfth rib on the right side. There were less definite shadows on the left side. These shadows, although somewhat removed from the lateral vertebral border, were regarded by the authors as direct evidence of calcification of the suprarenal bodies. Tumours of the suprarenals have been submitted to X ray examination by Henle.[3] He recorded two cases of neuroblastoma, but did not publish the X ray photographs. Voorhoeve [4] has described the examination of carcinoma of the suprarenals by means of radiography. Vietti [5] has recorded the X ray appearances found in both acute and chronic inflammatory conditions occurring in the region of the kidney, but no mention was made of Addison's disease.

CONCLUSIONS.

(1) X ray examination of the suprarenals should always be conducted in cases of Addison's disease, because when a positive result is obtained it gives the only direct evidence of disease of the suprarenals.

(2) A positive X ray finding will only be obtained in those cases where calcareous deposits are present in the tuberculous suprarenal glands.

(3) In those cases of Addison's disease which are due to simple atrophy of the suprarenals, no shadows are revealed in the radiographs taken of the suprarenal region. Recently I requested radiograms in two other cases of Addison's disease, but in both instances they gave negative results. In both cases, also, it was possible to examine the suprarenal glands at necropsy where the cause of the condition was found to be simple atrophy of the suprarenal glands.

(4) In those cases of suspected Addison's disease where pigmentation is absent or where for other reasons the diagnosis remains doubtful, then an X ray examination of the suprarenal glands may assist in the true interpretation of the condition.

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MANCHESTER CONVALESCENT HOME FOR CHILDREN. The Lord Mayor of Manchester recently formally opened Hollin Hall, at Bollington, near Macclesfield, which has been provided as a convalescent home for children by the Manchester and Salford Hospital Saturday and Convalescent Homes Fund. The house, which stands in four acres of gardens facing Alderley Edge, accommodates 12 boys and an equal number of girls.

THE KING GEORGE HOSPITAL, ILFORD.—The foundation-stones of the nurses' home of this new hospital have been laid by Lady Levita and Mrs. A. W. Green, wife of the chairman of the committee of management. The first section of the hospital, which will provide for a population eventually approaching 500,000, will contain 150 beds, and will cost £85,000. When the buildings are complete there will be 300 beds. Sir Cecil Levita states that no equally densely populated area is so lacking in voluntary hospital accommodation.

INFECTIVE GRANULOMATA AND STREPTOCOCCAL INFECTION.

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IN a previous paper,[1] dealing with two curious cases of glandular enlargement with mononucleosis and subcutaneous nodules in the scalp, we expressed the view that in studying the blood diseases of young children it would be advantageous "boldly to throw over any classification based upon classical leukæmia and lymphadenoma, and start anew on the assumption that we are dealing with infective processes to which there is a reaction by the tissues, and by the blood in particular, of an unusual kind." The two cases we then described represented more especially a type of unusual response in the blood, and recently we have had the opportunity of observing what we believe to be an unusual type of tissue-response to an ordinary streptococcal infection. The case presented many points of interest and, even if regarded merely as an example of lymphadenoma, the age of the child (13 months) makes it most unusual. The view we put forward, however, is that the condition was a response by the tissues to a streptococcal invasion which took the form of an infective granuloma, and that the case represents one of those borderline varieties of disease which particularly demand close study.

Clinical Summary.

A girl, aged 13 months, was admitted to the Hospital for Sick Children, Great Ormond-street, on April 29th, 1930, for "swollen glands in the neck." She was the second child of healthy parents, an older sister being perfectly healthy, and there was no family history of tuberculosis. This child was a full-term baby, born with normal labour, breast-fed for eight months, and then fed on a mixed diet. The first tooth was cut at five months and she had 11 teeth on admission. Before her illness she had begun to walk a little and to say a few words. The illness began seven weeks before admission when, about March 7th, 1930, she had "a bad cold" and her mother noticed that the right side of her neck was swollen. The glands were fomented and rapidly decreased in size. Five weeks after this the mother noticed that the left side of the face was swollen, and this led eventually to the child's admission. The child remained otherwise well and happy, sleeping well and eating moderately well.

State on Admission.—She was well nourished, happy, and free from pain. She appeared somewhat pale, with a temperature of 100° F., pulse-rate of 136, and respiration-rate of 28; she weighed nearly 18 lb. (the normal weight for her age is 21 lb.). There was considerable enlargement of all the cervical glands on the right side, especially the upper cervical and post-auricular group, which gave her face an asymmetrical appearance. These glands were firm and mostly discrete, but gave a feeling suggestive of early adhesion together. On the left side of the neck the glands of the posterior triangle and the supraclavicular group were most enlarged, with a curious bluish discoloration of the skin over them. There were a few small, firm, discrete glands in the right axilla and in both groins. The heart was rapid but otherwise normal, and the lungs appeared normal. The alimentary system showed good teeth and slightly enlarged tonsils which were not inflamed. No abnormality could be detected in the abdomen; the liver edge was easily felt, one finger's breadth below the costal margin (but this is normal for this age). The spleen could not be felt. The nervous system and the genito-urinary

[1] THE LANCET, 1929, ii., 812.

system were normal; no hæmorrhages were detected under the skin or in the retina.

There was some slight irregular pyrexia during the week after admission, and the glands on the right side of the neck enlarged slightly while those on the left side became smaller. The Wassermann reaction and Kahn reaction were negative. A fortnight after admission (May 15th, 1930) the glands were becoming larger in all areas, the bluish discoloration on the neck was more marked, and a stridor developed. Pyrexia of 102° was now present and the tonsils appeared inflamed.

Mr. James Crooks made an incision into the mass on the right side of the neck and discovered a small amount of thin purulent fluid. The child died shortly after the operation, with increasing difficulty in respiration. Cultures were made of the fluid from the neck, and streptococci were obtained.

Blood Counts.

—	April 29th.	May 12th.	May 15th.
Red cells.	4,000,000 per cm.	3,700,000 per cm.	4,100,000 per cm.
White cells.	12,800 per cm.	11,200 per cm.	34,000 per cm.
Hæmoglobin.	30 per cent.	50 per cent.	40 per cent.
Colour-index.	0·4	0·7	0·5
Polymorphonuclear leucocytes.	76 per cent. (9,728)	83 per cent. (90,967)	94 per cent. (30,960)
Small lymphocytes.	6 per cent. (768)	12 per cent. (1,344)	5 per cent. (1,700)
Large lymphocytes.	9 per cent. (1,152)	7 per cent. (784)	1 per cent. (340)
Mononuclears.	8 per cent. (1,024)	—	—
Eosinophils.	1 per cent. (128)	—	—

Post-mortem examination was performed 16 hours after death by Dr. R. C. Lightwood. The heart was normal. The lungs showed early broncho-pneumonia in both lower lobes. The alimentary tract was normal throughout. The tonsils were not enlarged or inflamed. The spleen was not enlarged but was engorged with blood, soft and easily friable. No nodules of any deposited material were found. The liver was somewhat enlarged, with two small white deposits in its substance suggestive of lymphadenomatous material. The kidneys and suprarenals were normal.

Lymphatic Glands.—There was a mass of adherent glands on both sides of the neck. Many of the glands were breaking down and contained thin, blood-stained pus. The mass on the right side was the larger, and pressed on to the lateral wall of the pharynx. There was also some œdema of the glottis and considerable œdema and induration of the skin on the right side of the neck. The mediastinal glands were much enlarged, dark-blue in colour, and not breaking down. Mesenteric glands were normal. The right iliac and inguinal glands were enlarged and beginning to break down. The left iliac glands were normal. The pre-aortic glands were enlarged. Cultures of the heart's blood showed a hæmolytic streptococcus. Cultures from an inguinal gland were sterile.

HISTOLOGICAL EXAMINATION.

Lymphatic Gland.—Surrounded by a definitely thickened capsule, the gland was very disorganised in structure, showing areas of intense engorgement with red blood corpuscles and polymorphonuclear leucocytes. Areas of gland tissues remained, however, showing (1) excess of eosinophils, (2) excess of endothelial cells, and (3) many large multinucleated endothelial cells, with centrally placed overlapping nuclei of the type associated with Hodgkin's disease (see Figure). The centre of many of the lymphoid follicles was invaded by endothelial cells. Staining for tubercle bacilli produced negative results.

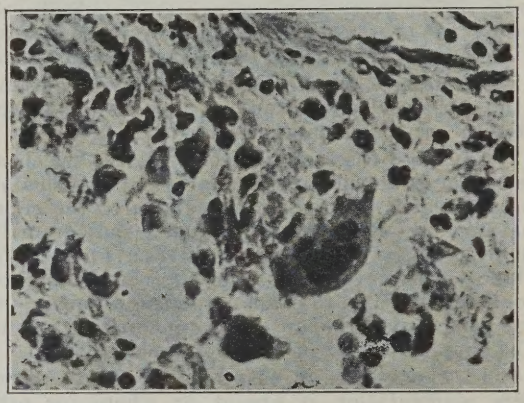
Liver.—The two nodules showed no definite demarcation from liver tissue. The bulk of the nodule was made up of endothelial cells, loosely distributed in a fibrous stroma. Eosinophils were present in excess and there were many large endothelial cells with several nuclei.

Spleen.—This organ showed great engorgement with red blood corpuscles and polymorphonuclear leucocytes. There were no definite endothelial cells to be seen and no giant cells. The appearance was that of acute inflammation, such as occurs in septicæmia.

Discussion.

In this case we have the story of a healthy child who, following a "bad cold," develops glandular enlargements which clinically bear a strong resemblance to those of Hodgkin's disease; post-mortem findings, such as the nodules in the liver and the histological appearances of the glands, confirm this diagnosis. Yet at the same time there is evidence of a streptococcal infection, and it is upon the relationship of this to the lymphadenomatous condition that we wish to focus attention. Rolleston,[2] in one of his admirable surveys of Hodgkin's disease, summed up the evidence of its ætiology in the phrase that its "most probable nature is an infective granuloma." In the same paper he goes on to discuss chronic inflammatory enlargements of glands, similar to Hodgkin's disease, which he has seen in various forms of infection, even such as *Bacillus coli* infection of the urinary tract. Ledingham[3] has investigated the type of tissue response produced by vaccinia virus, and states that it "is essentially of the order of an acute infective granuloma in which the reticulo-endothelial system is primarily and dominantly involved." He goes on to say that "evidence is afforded that precisely similar tissue responses occur when the virus is introduced into tissues remote from the epiblast"—e.g., the spleen—and among the actively dividing adventitial cells multinucleated and giant forms were present.

We are not here concerned with the exact infective process usually to blame in lymphadenoma, or even



Microphotograph of section of lymphatic gland (× 500) to show multinucleated cell. (For description see text.)

with the question whether a specific organism is likely to be incriminated. We have brought forward this case and quoted the authorities mentioned above in order to suggest that in studying such a disease-process as lymphadenoma the idea of the "soil" needs to be kept more in the foreground than that of the "seed." We hold that, in our present case, if the streptococcal infection had been more virulent at the onset or the child's resistance less, an acute septicæmia would probably have developed at once upon her "cold" and, on the other hand, if her resistance had been greater the terminal acute features would have not been present but she would have died with cachexia and cardiac failure as in "ordinary" lymphadenoma. In other words, the child's tissues put up an unusual border-line type of response to streptococcal invasion, which closely resembled Hodgkin's disease if, indeed, it was not identical.

It might be argued that here was a straightforward case of lymphadenoma with a terminal streptococcal infection. To this we must reply that: (1) the age of the child is most unusual for the ordinary variety

[2] Rolleston, H.: Brit. Med. Jour., 1926, i., 230.
[3] Ledingham, J. C. G.: Brit. Jour. Exp. Path., 1924, v., 332.

of Hodgkin's disease; (2) there was no clinical resemblance to streptococcal septicæmia until, literally, the last few hours; and (3) if the streptococcal invasion is to be regarded as a "terminal" event, when exactly did the new infection come into the picture? The granulomatous deposits in the liver, and the curious improvement in the state of the glands in one situation followed by enlargement of glands in another place without any obvious fresh primary focus, are facts which have to be faced if the lymphadenomatous nature of the case is denied; the question of such disorders as glandular fever or leukæmia can be excluded by the blood picture.

We would, therefore, submit that in the present case the tissue response to streptococcal infection was of the nature of an infective granuloma resembling Hodgkin's disease, and we would repeat our plea for the frank abandonment of too rigid a classification of the disorders of the blood, lymphoid elements, and reticulo-endothelial system as they occur in childhood. In this way only, we believe, are there possibilities for the advancement of knowledge.

SOME PRINCIPLES REGULATING THE LIFE AND DEATH OF PATHOGENIC INTESTINAL BACTERIA

IN ARTIFICIAL MEDIA AND IN FRUIT JUICES.

BY MACKENZIE DOUGLAS, M.D. EDIN.

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RECENTLY interest has been shown in the possibility of combating bacterial infections by means of diet. If it were possible to treat the intestinal tract as if it were inert, then the problem would be easy, because bacteria can be destroyed in the laboratory without the aid of harmful antiseptics. As this does not seem to be generally appreciated, it may be of use to discuss some of the principles which govern the growth of bacteria outside the body.

Many organisms which produce acid in culture media containing carbohydrates will give rise to alkali if cultivated upon media containing only proteins. This faculty of breaking up carbohydrates with the production of acid or of acid and gas is largely used for differentiating organisms into types. Let us first, however, consider what happens in a simple media consisting of water with 0·5 per cent. common salt and 1 per cent. peptone. Sierakowski [1] has shown that during the first four days the bacteria regulate the medium so that most of them reach neutrality; alkaline media are acidified and acid media are alkalinised.

Bacteria grow most rapidly in a culture medium which has originally the hydrogen-ion concentration which they try to reach in the first four days—e.g., *B. coli* and *V. choleræ* at about pH 7·6, and *B. dysenteriæ* (Shiga-Kruse) at 6·8. The further the hydrogen-ion concentration is originally from this point the slower is the initial growth. Without growth no changes in pH are observed, this change being therefore strictly a function of growth processes. After four days all bacteria tend to change the media to the alkaline side. Bacteria grown on sugar-free media produce alkaline substances the chemical nature of which is unknown, and at the same time carbon dioxide is liberated and increases the acidity of the media. The more opportunity there is for the escape of carbon dioxide, the more rapidly do the cultures become alkaline—e.g., in loosely plugged culture tubes with a surface that is large in proportion to the depth. Hermetically sealed tubes do not become alkaline, but if to these sealed tubes soda lime be added to absorb the carbon dioxide, then alkalinisation goes on as rapidly as in open tubes. Later the production of alkaline metabolic products leads to gradual alkalinisation.

Formation of Acid and Death of Organism.

If a sugar or carbohydrate, however, is present in the media, one of two things happens: first, the bacteria may not break up the sugar, which remains unchanged, and the result is the same as if the media were sugar-free; or, secondly, the bacteria may break up the sugar with (*a*) the production of acid or (*b*) the production of acid and gas. The action remains constant for any number of generations. I have shown in experiments previously published [2] that the acid production in glucose peptone water is independent of the number of organisms placed in the medium to start with. That is to say, if in one tube containing 1 per cent. glucose peptone water one *B. coli* be introduced, and into another exactly similar tube 250,000 *B. coli*, then at the end of 42 hours' incubation there will be the same number of organisms, roughly speaking, and in both tubes the pH will be the same. With *B. coli* the pH will always be 4·2, which is the maximum acidity attained and is quite constant for this organism. It is true for all strengths of glucose peptone water if there be at least 0·35 per cent. of glucose present. If there be 0·3 per cent. of glucose or less, then the pH will be less acid than 4·2, and if only 0·15 per cent. of glucose be present then the media will become neutral, and in eight days will even go to the alkaline side. The acid production varies in degree with the different bacteria—e.g., the pH with *B. typhosus* in glucose peptone water is 4·4 and is constantly at that figure. If daily subcultures are made from these tubes of glucose peptone water, inoculated with either *B. coli* or *B. typhosus*, it will be found that, when the percentage of glucose is 0·35 per cent. or higher, the tubes are sterile on the fourth or fifth day, while in the tubes with 0·3 per cent. of glucose or less the organisms live for at least three weeks. In fact, in glucose-free peptone water or broth *B. coli* have been found alive after a year.

If instead of peptone water bouillon made from meat be used, the pH reaches only a figure of 4·4 with *B. coli*, and that only if 0·4 per cent. of glucose be present; the organisms die on the eighth day, taking much longer than when peptone water is used. If only 0·25 per cent. of glucose is present, the medium is on the alkaline side of neutrality on the nineteenth day and the organism continues living. Although it is common in culture media to use 1 per cent. of glucose, actually only a portion of this is broken up. Sufficient acid or substances of an acid reaction are produced to prevent further growth and cause death within a few days. This lethal action is closely related to the acidity or hydrogen-ion concentration. The actual acid formed differs with the sugar present in the media, as well as with the organism tested. *B. coli* grown in glucose produces carbonic acid and an inflammable gas, which is a mixture of hydrogen and marsh gas. *B. typhosus* in a similar medium produces lactic acid, but no carbonic acid or other gas. In other cases acetic, oxalic, formic, and hippuric acids are formed.

The formation of acid, then, is the explanation of the death of the bacteria. A possible reason for the retarding of the lethal effect, when broth in used, may be found in the work of Koessler and Hanke.[3] Working with *B. coli*, they found that the very highly toxic base histamine is obtained from the amino-acid histidine by the splitting of carbon dioxide from the acid group of the amino-acid. This histamine production by *B. coli* was found only in cultures where considerable quantities of acid were produced at the same time. This strongly basic substance offsets, to some degree, the acid production, and enables the organisms to develop further before the hydrogen-ion concentration reaches the point of inhibition.

Peptone waters with varying known hydrogen-ion concentrations can be prepared by adding varying quantities of N/10 sodium lactate and N/10 lactic acid to 1 per cent. peptone water which does not contain any glucose, producing a "buffer" action. It was found in these stable media that *B. coli* died on the second day in the media with a pH of 4·2, but was alive in the tubes with pH of 4·3 and 4·5. In another experiment with *B. paratyphosus* A, the organisms died on the second day in the tube with the pH 4·3, but was growing in the tubes with pH 4·5 and 4·7. These tubes connected the lethal effect more definitely with the acid production.

These are laboratory experiments, and it will be readily understood that the conditions inside the human body are quite different. Otherwise it would be easy to control the flora of the intestine and cure intestinal inflammations. In the first place glucose, if given by the mouth, is quickly absorbed. It is also absorbed if given through an appendicostomy opening. In one case, in which this was done in a patient with a very prolonged colitis following bacterial dysentery, no glucose was found in the fæces and their pH was only slightly acid. Again, *coli* organisms are not found in the stomach, where the reaction is acid during digestion and continues acid. It is, of course, possible for these organisms to pass through the stomach with sufficient rapidity to escape death, but they do not find the stomach and upper part of the intestinal tract a suitable nidus for their growth. It is interesting to note, however, that in some cases of cancer or of pernicious anæmia where there is a lack of acid in the stomach, *B. coli* can be found in the small intestine at a much higher level than in healthy people. These remarks refer to the Gram-negative intestinal bacilli as well as to staphylococci and streptococci. They do not refer, in the same degree, to yeasts and to the acidophil bacilli, to which group belong the Bulgar bacillus and bacillus of Boas, which can occasionally be found in the stomach contents. After acid fluids pass through the stomach they are soon diluted and come in contact with alkaline bile and other alkaline body fluids, so it is difficult to imagine that the contents of the small or large intestine could have for 24 or 48 hours a pH in the neighbourhood of 4·2. These are the conditions that would be necessary to conform to those we have in the experiments described above.

Action of Fruit Juices.

The acidity of fruit juice varies within certain limits according to the different specimens, but the figures given are representative of fruit bought in March and April of this year. The juice of oranges had a pH of 3·2 and 3·4, the juice of a lemon was pH 2·0, the pH of tinned peach juice was 3·6, and the juice expressed from an apple was 3·5. Orange juice killed *B. typhosus* in times varying from 9 to 22 hours, *B. paratyphosus* A from 9 to 30 hours, *B. coli* and *B. paratyphosus* B in 48 to 120 hours. Tinned peach juice killed *B. typhosus* and *B. paratyphosus* A in 30 hours, *B. coli* and *B. paratyphosus* B in 72 to 120 hours. The juice of a lemon killed *B. coli* in 6 hours, although there was very great diminution in the number after 3 hours. *B. paratyphosus* A, *B. paratyphosus* B, and *B. typhosus* were all dead in 3 hours. Undiluted lemon juice killed *B. typhosus* in from 5 to 9½ minutes. The bacilli were killed in 15 minutes by dilutions of 1 in 2 and 1 in 4, while a dilution of 1 in 16 took 6 hours. Lemonade made from the juice of one lemon, two teaspoonfuls of sugar, and ten ounces of water had a pH of 2·8. In ten hours it killed *B. typhosus*, *B. paratyphosus* A, *B. paratyphosus* B, *B. dysenteriæ* Flexner, and *B. dysenteriæ* Shiga, and very nearly killed *B. coli* in that time. Staphylococci were killed in 5 hours.

In every case about two teaspoonfuls of the different fluids were employed in the experiments with about 2,000,000,000 of the different organisms. This was a fairly exacting test, as it would be difficult in natural circumstances to get such a concentration of bacteria.

Apple Pulp and Treatment of Dysentery.

Finally, several experiments were done with apples made into a pulp and boiled both with and without sugar. The pH varies in this case according to the dilution with water. The results recorded were with a pulp such as would be pleasant for eating and had a pH of 3·6. Two teaspoonfuls of this pulp were put in test tubes and mixed with 2,000,000,000 of various organisms and kept in the incubator. Subcultures were made at periods. There was very little difference in the results, whether the apple was boiled with or without sugar. *B. dysenteriæ* Shiga was dead in 10 hours; *B. dysenteriæ* Flexner and *B. typhosus* were dead in 48 hours, but the subcultures showed only slight growth after 10 hours. *B. paratyphosus* A showed very slight growth in 10 hours and was dead in from 24 to 30 hours. *B. coli* and *B. paratyphosus* B were still alive at the end of 48 hours. Six strains of *B. paratyphosus* B were tested and all showed this resistance to the action of apple pulp, in contrast to *B. paratyphosus* A, which was very sensitive. As a control, experiments were done at the times indicated as those at which the organisms died. Peptone water was added to the tubes to dilute the media and the tubes were then incubated. This proved definitely that they were sterile and that the subcultures in the previous experiments were not due merely to special portions of the media being sterile.

This last experiment is of special interest on account of the statement by Prof. Moro,[4] of Heidelberg. He states that he can cure children suffering from dysentery and from acute and chronic diarrhœa. For two days he gave 20 to 50 oz. daily of ripe apples made into a purée, equivalent to 7 to 20 moderate-sized apples. Nothing else, not even water, was given for two days. I have had no experience of this form of treatment, but it is to be noted that, from the in vitro experiments, the method of giving the apples, so that dilution is reduced to a minimum, seems that which would be most likely to give satisfactory results. It seems feasible that where an acid fluid might fail because of the ease with which it was neutralised, apple in bulk might not be so acted on, and might release acid in that part of the intestinal tract where the inflammation is situated. Dr.

J. W. Dickson[5] states that this method was employed by Jenner in cases of enteric, and quotes some of his own experiences. This form of treatment is sure to have a trial and the results will be awaited with interest, but it is most important that the method described should be adhered to so that the pH is disturbed as little as possible by dilution. If this treatment should prove of value, then I think it will be found that the explanation is on the lines of the experiments given in this paper.

Summary.

Gram-negative intestinal bacilli produce in glucose and some other sugars acids, which cause their death in peptone media in a few days. Each variety produces acid till a maximum hydrogen-ion concentration is attained. This concentration is constant for each variety of bacillus. It is 4·2 for *B. coli* and 4·4 for *B. typhosus*. Fluids with acidity below 4·2 cause death of the organisms rapidly, the rapidity depending largely on the degree of acidity. Two teaspoonfuls of the juice of a lemon kills 2,000,000,000 *B. typhosus* in less than ten minutes. In the body this acidity is rapidly neutralised after it leaves the stomach, but it seems reasonable that apple pulp might be effective where a fluid would be neutralised.

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SPONTANEOUS PNEUMOTHORAX.

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(WITH ILLUSTRATIONS ON PLATE.)

BY spontaneous pneumothorax is meant a condition in which air has escaped into the pleura by nature's means; the term is used in contradistinction to artificial pneumothorax, in which the air has been introduced into the pleura by the physician. Both conditions, therefore, have this in common, that air is present in the pleura. They differ in that the air came from the lung in spontaneous pneumothorax, its admission being due to rupture of the lung into the pleural cavity; whereas in artificial pneumothorax the air came from outside the body, and gained entrance not by natural processes but by means of a trocar and cannula. The induction of artificial pneumothorax is now a commonplace in the diagnosis and treatment of diseases of the chest. By this means, under favourable circumstances, the lung can be collapsed to any extent up to complete compression against the spine, the degree of compression being under control. Similarly, in spontaneous pneumothorax the amount of compression of the lung varies. There may be but a small escape of air into the pleura, compressing only a small portion of the lung, further spread being limited by pleural adhesions. In other cases various intermediate degrees of compression may be found. Finally, in the most marked instances the escape of air may be so great as to compress the whole lung completely.

Ætiology.

Spontaneous pneumothorax, which was first described by Itard[1] in 1803, occurs more often on the left than on the right side; it is found complicating various conditions, notably pulmonary tuberculosis. Biach[2] analysed 918 hospital cases, and of these 715, or 77·7 per cent., were in this category. Of the remaining 203 cases, 65 complicated gangrene of the lung, 45 empyema, and 32 wounds of the chest. Among other cases may be mentioned those which follow the rupture of an emphysematous bulla, in people who may have been previously in good health (Case 1); and also those which develop during a paroxysm of asthma (Case 2). The literature shows that pneumothorax thus complicating asthma is a very rare occurrence. Recent advances in knowledge have made it possible to demonstrate spontaneous pneumothorax in various conditions in which its presence was previously unsuspected, particularly when the pulmonary collapse is incomplete. It may, therefore, be the case that Biach's figures exaggerate the actual preponderance of pulmonary tuberculosis as a precursor of spontaneous pneumothorax.

The cause of spontaneous pneumothorax in pulmonary tuberculosis is the breaking down of a lesion situated close to the pleura and perforating its visceral layer (Case 3). The reason why the complication does not occur more often in pulmonary tuberculosis—the site of which is so often near the periphery of the lung—is that the overlying pleura is usually thickened and often adherent.

Symptoms and Diagnosis.

In a typical case of complete spontaneous pneumothorax, in which so much air has entered the pleura that one of the lungs has become completely collapsed, the history tells of an illness with an acute onset, ushered in by sudden and continuous thoracic pain or discomfort which is usually confined to the neighbourhood of the lung rupture. The patient sits propped up in bed, breathing rapidly, and sweating in the face. The pulse-rate is between 120 and 140 per minute. He is, in fact, gravely ill and, when complete spontaneous pneumothorax occurs in advanced pulmonary tuberculosis, this complication often ends his life. The heart is found to be drawn towards the uncollapsed lung. The chest does not move over the collapsed lung during respiration. Vocal fremitus and vocal resonance are cut off, and there may be hyper-resonance on percussion. But the most strikingly characteristic sign of the condition is discovered on auscultation; on the collapsed side the breath sounds cannot be heard. This is a silence of emptiness, but, just as in an empty building small movements strike the ear, so in an empty chest certain sounds, small at their points of origin, may reverberate in the cavity and become modified in character. For instance: (1) over perhaps a small area only, we may hear blowing or cavernous breath sounds; (2) we may hear musical râles—metallic tinkling; (3) if two coins are hit together on the chest wall, we may find, on auscultation, that the sound produced becomes bell-like in quality. This coin sound, however, is often absent. If cavernous breath sounds can be heard we may assume that the hole into the lung is still patent, and if, a day or two later, they can no longer be heard, it would be evidence that the hole had closed in the interval. The spleen or the liver respectively may be found displaced downwards, according to which side is involved. In

a certain proportion of the cases a pleural effusion appears on the affected side (Case 4). This fluid alters in position with the position of the patient, and it may produce a succussion splash. When spontaneous pneumothorax occurs in a tuberculous patient, the effusion, when present, may contain large numbers of tubercle bacilli. This is what one would expect, for a tuberculous focus has burst into the pleura. It thus differs from an ordinary pleural effusion in which tubercle bacilli can seldom be demonstrated, the fluid being an exudate from a tuberculous lesion. An X ray examination is valuable in diagnosing spontaneous pneumothorax when the patient is well enough to undergo it. By this means the degree of pulmonary collapse is often well shown. When a pleural effusion is present the fluid moves freely in the pleural cavity, following the laws of gravity. The appearances thus contrast strongly with those of ordinary pleural effusion.

The diagnosis of partial pneumothorax presents more difficulty than that of complete pneumothorax. In such cases the symptoms and the physical signs are not, as a rule, striking, though a sudden onset accompanied by pain in the chest is often noted. Special stress should, therefore, be laid on any slight change in the position of the heart, but it must be remembered that the heart may not be displaced even when much air is present in the chest, particularly in robust persons. X rays are often of little help in partial cases, except in the early stages, unless fluid is present. If, however, free fluid is demonstrable at a pulmonary base they are of much value, for its presence clinches the diagnosis.

Spontaneous Pneumothorax Complicating Artificial Pneumothorax.

The occurrence of spontaneous pneumothorax among patients undergoing artificial pneumothorax treatment is not surprising for, when the surfaces of the pleura are separated by a layer of air, the pleurisy caused by tuberculous focus near the surface of the lung cannot produce protective adhesions. Of 135 cases of pulmonary tuberculosis in which artificial pneumothorax was successfully induced at Ventnor,[3] nine developed lung rupture. The figures of other series of cases are as follows: Carling, one case in 67; Morriston-Davies, two in 90; Riviere, one in 80; and Forlanini, eight in 159. Spontaneous pneumothorax thus appears more common in cases of pulmonary tuberculosis which are undergoing artificial pneumothorax treatment than in other cases of pulmonary tuberculosis. It is, however, a question whether this difference is so marked as it appears at first sight. If artificial pneumothorax treatment is being carried out, the spontaneous condition is more likely to be diagnosed, as the patient is usually under the observation of an expert. It is probable that partial spontaneous pneumothorax, occurring in the course of pulmonary tuberculosis, is not infrequently diagnosed as an attack of pleurisy. Thanks to Hutchinson and Blair,[4] this mistake should be made less often in future. These observers have pointed out that in spontaneous pneumothorax complicating artificial pneumothorax a typical temperature curve may be found. They only deal with cases in which recovery took place, for in fatal cases the type of pyrexia is necessarily modified. The following is their description:—

1. A steep initial rise of temperature coincident with the first symptoms.
2. A gradual staircase fall to normal, in which the previous daily variation of temperature is roughly preserved.
3. The fall by lysis reaching the 99° level—i.e., approximately normal limits, in a period which varies with the height of the initial rise. Where the initial rise is in the neighbourhood of 104° F. the temperature reaches normal limits in almost exactly three weeks, and if in the neighbourhood of 103°, in about 14 days.

When spontaneous pneumothorax is suspected in a patient who is undergoing artificial pneumothorax treatment, a change in the intrapleural pressure would assist diagnosis. As the intrapleural pressure is always noted before air is admitted into the pleura during this treatment the figures will be available for comparison.

Prognosis.

In cases of spontaneous pneumothorax, whether partial or complete, the patient usually recovers with complete re-expansion of the lung in the course of a few weeks, provided that he had been previously in good health. The most typical instance of this is when an emphysematous bulla ruptures in an active and robust individual. But when complete spontaneous pneumothorax occurs in advanced tuberculosis the prognosis may be difficult. In some of these cases it causes death within a few days. In others it acts as an additional handicap, the patient's downward course being accelerated in various degrees in different cases. In others, again, the patient recovers from the immediate dangers of the pneumothorax and gradually sails into calmer water, the pneumothorax persisting and the patient not being apparently any the worse or any the better for his experience. Finally, in certain cases, the complication is followed by an improvement in the patient's condition, the collapse of the lung causing conservative changes in the lesion. There are a few cases of pulmonary tuberculosis going about with a complete spontaneous pneumothorax. Such patients are occasionally seen in the out-patient departments of hospitals, presenting themselves, it may be, because of symptoms which did not arise in the chest. Spontaneous pneumothorax must, therefore, be regarded as one of Nature's ways of curing pulmonary tuberculosis, for acute extension of the disease cannot take place in a collapsed lung. Thus the modern treatment of inducing artificial pneumothorax is really an imitation of Nature's methods. That healing may result from spontaneous pneumothorax has been known for many years, for the older observers were of opinion that its onset in advanced tuberculosis sometimes tended to the prolongation of life.

Treatment.

The physician's aim should be to control the situation by placing the patient in favourable surroundings, by combating shock should it occur, and by removing air or fluid from the pleural cavity in certain instances. In pneumothoraces of small and moderate size no treatment is called for beyond rest in bed. When, however, the pneumothorax is complete, and the patient is in distress, an injection of morphia should be given and the best nursing obtained. Marked dyspnœa suggests that the lung rupture is valve-like, and that a positive pressure in the pleura is present. When this is suspected, a fine trocar and cannula may be passed into the chest and a pad of gauze fixed over the cannula when the trocar is removed. If positive pressure is present a puff of air is heard on withdrawing the trocar and the patient's symptoms are immediately relieved. When an artificial pneumothorax apparatus is available it is better to attach it to the trocar and cannula for by means of the manometer which forms part of the

apparatus, the intrapleural pressure present before and after the withdrawal of the trocar can be noted. Small pleural effusions may be ignored, but large effusions should be drawn off and replaced by air. One reason for air replacement under these circumstances is that a buffer of air better prevents pleural adhesions from being formed than a buffer of fluid.

Illustrative Cases.

The following cases illustrate many of the points referred to above. In Cases 1 and 3 it was presumed that the pneumothorax was caused by the rupture of an emphysematous bulla, but no demonstrable generalised emphysema of the lungs was present in either instance. Pulmonary tuberculosis was not present in either of these cases or in Case 2. The latter case is included on account of the rarity of pneumothorax as a complication of asthma. Case 4 was one of pulmonary tuberculosis in which spontaneous pneumothorax developed while the patient was undergoing artificial pneumothorax treatment.

Case 1, a man aged 22, a storekeeper's assistant, was admitted at the Royal Chest Hospital on May 4th, 1929. He had felt well on May 3rd but, on waking in the morning, he found himself lying on his abdomen with pain in his right chest and a dry cough, and feeling short of breath. His health record and his family history were good. On admission, the breathing was restrained, as deep respirations caused pain on the right side. The patient did not, however, feel ill. The pulse- and respiration-rates and the temperature were 80, 30, and 98·4° F., respectively, and there was no cyanosis. The apex-beat was in the normal position. The physical signs on the right side were as follows: The percussion note was slightly hyper-resonant all over the back and over the first three interspaces in front. The breath sounds were weak throughout, and they had an amphoric quality over the lower half, where the whispered sound was increased. The liver was not displaced.

His recovery was uninterrupted. On May 27th little difference between the two sides could be detected, and the patient got up on June 8th. He was discharged on the 27th.

It was presumed that the pneumothorax was caused by the rupture of an emphysematous bulla, but the lungs as a whole did not appear to be emphysematous, either on clinical or X ray examination. Tubercle bacilli were not found in the sputum. X ray examination showed the right lung to be partially collapsed on May 7th, a diminished amount of collapse on the 24th, and a re-expanded lung on June 11th.

Case 2, a married woman aged 38, who had been subject to attacks of asthma for 18 years, went to Hong-Kong early in 1925. In March of that year, during a spell of hot damp weather, she had a severe attack of asthma one afternoon when suffering from a cold. During this attack she was suddenly seized with severe pain in the neighbourhood of the left lower ribs, and at once sent for the doctor, who found her gravely ill. She was sitting up in a propped-up position gasping for breath, and her face was cyanosed. The heart was mostly to the right of the sternum and its action was markedly accelerated. The left chest was bulging and was tympanitic at the left apex and along the left vertebral border. The respiratory murmur was feeble on the left side, where amphoric breathing could be heard over a limited area. Recovery was rapid, and ten days later the heart had returned to its normal position and the physical signs over the left lung had returned practically to normal. About nine months later, left pneumothorax developed again during an attack of asthma and bronchitis. This time the symptoms were not so severe at the onset but the physical signs were very similar. Recovery was not so rapid, as there was still evidence of a large pneumothorax three weeks later. After three months, however, the situation was found to have returned to normal, both on clinical and on X ray examination. No evidence of pulmonary tuberculosis was found.

Case 3, a man aged 25, a scientific instrument maker, was admitted to the Royal Chest Hospital on August 11th, 1927. The history was that at 6.30 on the previous morning, he felt a sudden pain over the lower sternum and in the middle of the back, when stooping to put on his socks. He found that sitting up relieved the pain. He soon became conscious of a feeling of fullness in his right chest. This fullness extended up into the neck and gave rise to a choking sensation. Meanwhile, tenderness had become noticeable in the right lower chest. The respirations were shallow, but not increased in rate. He went to his work, but had to stop walking every few steps, as the choking sensation returned. He was comfortable when at work, unless he stooped. During the night he was comfortable when on his left side, but had pain and a sense of fullness if he moved on to his right side. On admission his condition was much the same as on the previous day. He stated that he had been the subject of a cough for some years, and that he had had diphtheria, scarlet fever, and measles in childhood. His father had died of heart trouble. He was well covered, and did not look ill. There was no cyanosis. The pulse-rate was 70, the respiration-rate 24, and the temperature 99° F. The heart was regular and not displaced, but there was an apical systolic murmur. The breath-sounds were absent over the right chest. The vocal resonance and the vocal fremitus were, however, not affected, and the coin-sound was not heard. There was hyper-resonance over the liver area, and metallic tinkling could be heard in this situation during inspiration. The left lung appeared to be normal. The abdomen was normal. On August 28th a vesicular murmur could be heard up to the second rib in front and up to the spine of the scapula behind. On Sept. 5th vesicular breath sounds were demonstrable all over the chest, but they could still be better heard on the left side; the cardiac murmur had disappeared.

The patient was discharged on Oct. 9th, the lung having completely re-expanded. He had shown no evidence of pulmonary tuberculosis, either on clinical, bacteriological, or X ray investigation; nor had emphysema been found either by clinical or X ray methods.

Case 4, a man aged 20, a chemist's assistant, was admitted to the Royal Chest Hospital on June 15th, 1928, complaining of languor, anorexia, and night sweats, dating back for some months. The symptoms became worse five weeks before admission and he had lost 1 st. in weight during the last month. His previous health had been good. His brother had a tuberculous hip. On examination he was found to be of good physique and in fair condition. The heart was normal in size, sounds, and position. Pulmonary tuberculosis was found on the right side, involving the upper half of the lung. X rays confirmed this finding, and also showed tuberculous infiltration in the left middle zone. The patient went downhill and the weight continued to drop. The temperature range was from 98° to 100°, the pulse-rate averaged 100, and the respiration-rate 20. The cough was negligible and there was hardly any sputum. Tubercle bacilli were found in a small specimen on one occasion. On July 31st a right artificial pneumothorax was induced, and refills were made at appropriate intervals until Oct. 10th. During this period a marked improvement in the patient's condition was noted. The weight, indeed, continued to fall till August 25th, reaching 10 st. 12 lb. on that date, but it had risen to 11 st. 9 lb. on Oct. 10th, when he was getting up for four hours daily. On Oct. 11th the right lung ruptured, right pneumothorax accompanied by a moderate-sized right pleural effusion resulting. The onset was sudden; a rise of temperature to 105° F. and of pulse-rate to 130, accompanied by sweating and slight pain in the right lower axilla. On Oct. 12th, 15 oz. of cloudy fluid were removed from the pleural sac. This fluid contained many tubercle bacilli and a few staphylococci, together with polymorphonuclear and mononuclear cells in equal proportion, and many eosinophil cells. There was a "staircase" fall of temperature after Oct. 11th, and the temperature became normal on Oct. 24th, when the patient felt as well as before the lung rupture, though a moderate amount of effusion remained. On Oct. 31st air replacement of the pleural fluid was performed, 30 oz. of clear greenish-yellow fluid being removed and 350 c.cm. of air admitted. The fluid contained many tubercle bacilli but fewer pus cells.

The patient subsequently went to the Royal National Hospital for Consumption at Ventnor, where he did well. Fig. I., on the Plate opposite p. 813, shows the position of the right lung when it was undergoing artificial pneumothorax treatment. Figs. II. and III. show the lung more completely collapsed, owing to spontaneous pneumothorax having supervened.

My thanks are due to Dr. L. C. Hunt and to Dr. A. W. Stott for permission to publish Cases 2 and 3 respectively, and also to Dr. P. Kerley for the X ray films, reproduction of which accompany this paper, and for the explanatory notes thereon.

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CLINICAL AND LABORATORY NOTES

RENAL CALCULUS IN INFANCY.

By PHILIP WILES, M.B. LOND., F.R.C.S. ENG.,
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UNTIL the present century urinary stone was regarded as a disease of the extremes of life, but figures collected more recently suggest that, at any rate in England and America, the optimum period is now the fifth decade. The cause for this change is difficult to determine, but it may be significant that in childhood the stone, wherever situated, has frequently a basis of urates, perhaps originating in the "infarctus uriques" described by Cless.

Thus in 1899 Comby,[1] in 600 consecutive autopsies in children, found renal lithiasis in 100. He gives some details of 48 of these. All except two were under 12 months old, and the great majority had died of acute pulmonary or gastro-intestinal disease. In 21 there was "sand" only, and in the remainder were tiny hard angular calculi, all composed of urates. In 1895 von Bokay [2] was able to collect in Hungary 1621 cases of vesicular and urethral stone in children under 15 years of age, the majority being between 3 and 4 years of age. He was concerned mainly with clinical records and not post-mortem material, and renal stone was seldom observed. In England about the same period many smaller series of vesical and urethral stone were published. Hence it may be assumed that most stones of the lower urinary tracts in children have a nucleus of primary renal origin. Indeed Thomas and Tanner,[3] in an analysis of a series of 203 cases, claim to have traced such an origin in 84 per cent.

The factor responsible for the decline in the incidence of stone in childhood may therefore be a decrease in the frequency either of the occurrence of these uric acid nuclei or of their subsequent growth in the lower urinary tracts. In the 1926 edition of "Disease of Infancy and Childhood," Holt [4] still maintains that such uric acid granules are a common post-mortem finding in America, but a personal impression is that in London they are now not so often seen. However, if there has been a decrease in their occurrence the reason is obscure, because both the "infarctus uriques" and the tiny calculi may be present at birth. The subsequent growth of the stone might be affected either by a decrease in the incidence of urinary infection or by a general change of diet in such a direction as to diminish the excretion or the concentration of mineral salts. Von Bokay [2] studied in detail the geographical distribution of his series and thought he could exclude both drinking water and climatic conditions from the ætiology.

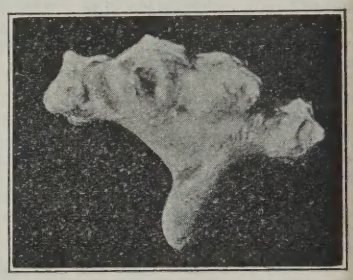
Cases of Renal Calculus.

	Total.	Under age 10.
Swift Joly [5]	165	0
Cabot [6]	153	9
Brongersma [7]	244	2
Holland [8] (by X ray)	402	3
	964	14

"Gross" renal calculus has always been uncommon in children, in spite of the frequency with which a suitable nucleus is present. In collected cases only 14 out of 964, or about 1·5 per cent., occurred under the age of 10, and mostly in the last few years of that decade of life.

LARGE BRANCHED PHOSPHATIC STONE IN A CHILD UNDER TWO.

I am unable to trace the report of any case of the large branched phosphate or carbonate calculus typical of adult life occurring under the age of 6, at which age Hryntschak [9] and Rafin [10] each report one. Botto-Micca [11] removed from the kidney of a child, aged 7, two stones of calcium phosphate weighing 5·0 and 5·1 g., and from its bladder a urate stone weighing 46 g. Winsbury White [12] mentions Specimen No. 7347.1 in the Museum of the Royal College of Surgeons of England, a stone 1 inch long in the pelvis of a kidney removed post mortem from a child who for some time had had grossly infected urine and had died at the age of 4½ months. No analysis has been made of this stone, but its appearance suggests a phosphatic deposit on a different nucleus. Brown [13] removed a large branched stone of xanthin from the kidney and nine faceted ones from the ureter of a child aged 3. In Hill's [14] case of a child of the same age the composition is not stated but apparently it was not phosphatic, and Holt [4] gives no details of a post-mortem case to which he refers. The following case is therefore of some interest :—



The calculus (actual size).

A boy, aged 1 year and 10 months, was admitted to the Middlesex Hospital on Jan. 24th, 1930. He had always lived at Clacton-on-Sea and had been breast-fed for two months, and later fed on humanised milk. Both parents and three other children were healthy. Five weeks before admission his parents had noticed blood in his urine. This had occurred on one occasion only, and he had had no pain or frequency of micturition. They consulted Dr. P. Coleman, of Clacton-on-Sea, who ordered an X ray, which showed the shadow of a large branched calculus in the right kidney. The urine was clear and contained no pus cells.

The patient was operated upon by Mr. A. E. Webb-Johnson on Jan. 31st, 1930. The kidney was exposed by a lumbar incision and the stone removed by nephrotomy. The wound healed by first intention, and he was discharged on Feb. 24th, 1930.

The stone was found on analysis to be composed of the phosphates of calcium, magnesium, and ammonium. No urates were present. Its dimensions were 3·8 × 2·7 × 1·7 cm., and its weight was 5·1 g. when wet and 4·0 g. when dry. A photograph showing its appearance and actual size is reproduced above.

I am indebted to Mr. A. E. Webb-Johnson for permission to publish the case.

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DESICCATED HOG'S STOMACH IN PERNICIOUS ANÆMIA.

By G. T. Allerton, M.B. Lond.,
HONORARY PHYSICIAN TO THE TORBAY HOSPITAL.

THE following case of pernicious anæmia is interesting because the man relapsed after treatment for 18 months with liver extract, and subsequently recovered when desiccated hog's stomach (ventriculin) had been added to his diet.

The patient, a man aged 68, was first seen by me in September, 1928. His only complaint was a feeling of tiredness. A blood count gave the characteristic picture of pernicious anæmia—viz., red blood corpuscles, 1,625,000 per c.mm.; colour-index, 1·3; hæmoglobin, 42 per cent.; reticulocytes, 1·4 per cent.; and white blood corpuscles, 5500 per c.mm. There was considerable poikilocytosis, anisocytosis, and polychromatophilia. One normoblast was seen while counting 200 white cells.

He responded well to treatment by liver extract, and in December, 1928, the blood count was: red blood corpuscles, 3,268,000 per c.mm.; colour-index, 1·04; hæmoglobin, 68 per cent.; white blood corpuscles, 6900; some poikilocytosis and aniscytosis, but no other changes.

He remained in good health throughout 1929, and was able to lead a normal life. Periodical blood counts always showed the red cells between three and four million.

In March, 1930, he began to have a return of his original symptom—tiredness—and loss of appetite. When in health he had a very florid complexion, but this had largely disappeared, and there was a distinct icteric tinge of the conjunctivæ. His blood picture on April 15th, 1930, was very similar to the first one taken: red blood corpuscles, 1,700,000 per c.mm.; colour-index, 1·3; hæmoglobin, 66 per cent.; white blood corpuscles, 12,000 per c.mm.[1]

He was given the contents of one vial of ventriculin (Parke, Davis & Co.) and 1 ounce of Armour's liquid liver extract a day. The result was rapid and dramatic. Within a week a sense of well-being had returned and the icteric tinge in the conjunctivæ had disappeared. The blood count on May 21st, 1930, was: red blood corpuscles, 4,400,000 per c.mm.; colour-index, 0·8; hæmoglobin, 72 per cent.; white blood corpuscles, 10,200 per c.mm.; slight poikilocytosis and anisocytosis.

For the past three months he has remained in excellent health, and, although he celebrates his seventieth birthday in August, has the vitality and appearance of a man ten years his junior.

I should like to acknowledge the assistance of Dr. H. A. Fielden, hon. pathologist to the Torbay Hospital, who kindly did the blood counts for me.

[1] Patient had a cold, followed by bronchitis, which, I think, explains the increase in the white cell count.

A CASE OF IMPENDING ISCHÆMIC CONTRACTURE.

By H. P. Nelson, M.B. Camb., F.R.C.S. Eng.,
SURGICAL REGISTRAR, ROYAL NATIONAL ORTHOPÆDIC HOSPITAL.

Volkmann's ischæmic contracture is due to an anoxæmia of the muscle tissue. This may follow the occlusion of the main artery in the proximal segment of a limb[2]; but in the upper extremity, owing to the abundant collateral circulation, it is extremely rare for this to be the sole factor in the production of a Volkmann's contracture. On the other hand, obstruction to the venous return will produce that degree of anoxæmia which is required for the rapid onset of an ischæmic contracture.[3] This venous obstruction may be due to external pressure; the danger of a tight splint or bandage in supracondylar or forearm fractures is well known. But venous obstruction may occur independent of external pressure from a subfascial effusion, especially in the arm of a child, where there is less space to accommodate any effusion. Subfascial laceration with, possibly, the tearing of a small artery at the time of injury or bruising of the forearm muscles during reduction of the fracture, will produce the subfascial effusion, and acute flexion of the elbow will help still further to embarrass the circulation.

The case here described presented the classical signs of an impending ischæmic contracture—namely, a supracondylar fracture occurring in a child between the ages of 5 and 13, a brawny induration in the arm which was gradually increasing, persistent severe pain, cyanosis of the hand, and limited voluntary flexion of the fingers.

The patient, a girl aged 9, was jumping a tennis net when she caught her foot in it and fell on her left hand. I saw her 15 minutes after the accident. There was an obvious fracture at the lower end of the left humerus, with considerable backward displacement of the lower fragment. The skin was intact, but no radial pulse could be felt at the wrist.

Condition after the accident.—After two hours the fracture was reduced under a general anæsthetic. The region of the elbow felt brawny. No crepitus could be felt as the fracture was reduced, suggesting that other tissues were intervening between the broken ends of the bone. There was still no radial pulse, though the deformity was completely reduced. The elbow was flexed to slightly beyond a right angle, and fixed to the front of the chest with strapping.

After six hours the arm had become very painful. The induration was more extensive and harder, and because of the increase in induration and pain the strapping was removed and the flexion of the elbow diminished.

After eight hours the arm had become still more painful. The induration had increased, extending from the middle of the arm to the middle of the forearm. The indurated area was now tense and swollen, with the skin so tightly stretched that ordinary pressure had no effect.

After ten hours it appeared as if gangrene would ensue. The pain had diminished in no degree; the hand and forearm were cold to the touch; the skin had a dusky bluish appearance; blebs were forming, and the whole limb was swollen from the shoulder to the fingers. The fingers and wrist had remained straight; she was still able to flex the fingers very slightly. It was noted for the first time that there was anæsthesia of the volar surface of the index-finger. In view of these observations it was decided that some operative interference was necessary.

After exactly *11 hours* a 4-inch longitudinal incision was made on the medial side of the front of the elbow-joint. The skin was so tight that it appeared to split apart in front of the knife. The incision was continued through the deep fascia, which was as tightly stretched as the skin. A quantity of dark red fluid welled up from the incision, and after this fluid had been wiped away a small spurting artery, probably the anterior ulnar recurrent, was found in the depth of the wound and ligatured. The fracture was inspected, and the position of the fragments seemed to be satisfactory.

An examination of the median nerve and brachial artery was now possible. Distal to the elbow the artery was difficult to identify, owing to its great constriction, but on tracing it upwards both median nerve and brachial artery were seen to be nipped between the surfaces of the fracture. The fragments were gently levered apart and the artery and nerve released. The artery was intact, and the pulse returned at the wrist; the nerve was flattened but did not appear to be torn. The margins of the incision could not be drawn together, and a gap of 1 inch remained.

Subsequent progress.—During the first week after the operation the child ran an irregular temperature, occasionally reaching 101° F., and since no signs of infection developed it was assumed that the temperature was due to the absorption of blood-clot. The induration in the arm disappeared within three days, and in ten days the limb had returned to its normal size. At no time did the fingers or wrist show any contracture. Voluntary movements of the little and ring-fingers were always of normal extent. Voluntary flexion was limited in the middle finger and absent in the index-finger. There was wasting and paralysis of the flexor and abductor pollicis brevis and anæsthesia of the volar surface of the index-finger.

[2] Makins, G. H.: On Gunshot Injuries of the Blood Vessels. London, 1919.

[3] Brooks, Barnley: Arch. Surg., 1922, v., 188.

The discharge from the wound was serous, and so copious that it soaked through all the dressings. The wound remained non-infected, granulated slowly, and at the end of seven weeks was covered with skin.

The events leading up to the operation and the facts disclosed by it directed the subsequent treatment to the vascular and nervous lesions. The limb was allowed to rest on a pillow in slight flexion. A late X ray showed some posterior displacement of the lower fragment. No special efforts have been made to remedy this.

Condition after three months.—The movements began to return after three months of complete fixation at 80° flexion. All the muscles of the arm were functioning normally; the flexion and extension of the fingers was normal, and the thenar muscles had recovered. There was slight anæsthesia on the volar surface of the index-finger.

After six months the median nerve had completely recovered. There was about 30° of movement in the elbow-joint.

After 12 months the range of movement has been gradually increasing, and is now about 50°. There is full pronation and supination, and the child uses her arm as she would if it were normal.

Many writers have briefly referred to the prophylactic treatment of this condition by early incision of the deep fascia, but unfortunately there are very few recorded cases where this has been carried out.

To prevent this calamity, the possibility of its occurrence after injuries to the elbow or forearm must be borne in mind, and it is to be suspected if there is severe persisting pain. The best results are obtained from operations performed within the first 12 hours; if interference is delayed for more than 24 hours complete recovery is very unlikely. The incision should be 3 to 4 inches long over the area of greatest tension, and the deep fascia must be divided to expose the muscles.

Mr. W. Rowley Bristow kindly saw this case in consultation with me and performed the operation.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING IN WINNIPEG.

(*Continued from p. 746.*)

SECTION OF ANÆSTHESIA.

AT the third meeting of this Section Dr. H. W. FEATHERSTONE (Birmingham), Vice-President, occupied the chair, and a paper on

Avertin

was read by Dr. F. B. PARSONS (Cambridge). Non-volatile anæsthetics, he said, had not attained such popularity as volatile inhalation anæsthetics because the depth and duration of anæsthesia could not be controlled so easily. As a general rule, non-volatile anæsthetics were solid fat-soluble substances which were absorbed and, in particular, excreted comparatively slowly. Dosage was unsatisfactory and the best method available was to give a certain proportion of the drug per unit of body-weight of the patient.

Avertin, or tri-brom-ethyl-alcohol, was an odourless white crystalline powder containing 85 per cent. of bromine. The powder itself was comparatively insoluble in water, but if it was first dissolved in amylene hydrate an aqueous solution could be prepared easily. Freshly prepared solutions of avertin were non-irritating to the rectal mucosa, but, as decomposition readily occurred, it was essential to test the solution before administration by means of Congo-red. The dose of the drug had been stabilised at 0·1 g. per kg. of body-weight, and this was regarded as perfectly safe. This dose produced anæsthesia in 30 per cent. of cases and the other 70 per cent. required the addition of a small amount of volatile inhalation anæsthetic.

Some authorities had employed premedicaments before the administration of avertin, but on account of the depressant action of the drug upon respiration it was inadvisable to use morphine in this connexion. Induction was very pleasant for the patient; it was associated with a sensation of sleepiness and was unaccompanied by struggling. Unconsciousness occurred after about 15 minutes in man, the blood pressure fell very little—10 to 20 mm. Hg. Dr. Parsons believed this was due to a central cardiac effect and not to dilatation of peripheral blood-vessels as was thought in some quarters. The drug had very little action upon the heart; in this respect it was about 16 times safer than chloroform. Respiration was markedly slowed, and with toxic doses death occurred from failure of this function. There was marked muscular relaxation. Anæsthesia usually persisted one and a half hours and was followed by a deep sleep lasting several hours. Avertin acted as an analgesic and as an amnesic after operation. It was absorbed very rapidly by the rectal mucosa; it was detoxicated by the liver and its breakdown products were excreted almost exclusively in the urine over a period of several days. There was no satisfactory method of interrupting avertin anæsthesia, but it had been suggested that thyroxine was useful in this connexion.

Dr. Parsons regarded avertin as preferable to other rectal anæsthetics, because, when carefully prepared, it did not irritate the rectal mucosa. The drug, however, possessed serious drawbacks concerned with detoxication and elimination, and it had been calculated that its intrinsic mortality-rate was equal to that of chloroform. It should not be employed when there was disease of the liver, kidney, or rectum, or when there was interference with respiration. It was, however, of value for those undergoing operations for exophthalmic goitre; psychic distress was minimised, there was the least possible action upon the heart, and the excess of thyroxine in this disease hastened detoxication. Its use was generally unaccompanied by post-operative sickness. In conclusion, Dr. Parsons said he considered avertin the best of the non-volatile anæsthetics available, but it should be regarded, however, as a particular form of premedicament rather than as an anæsthetic.

Dr. J. S. LUNDY (Rochester, Minn.) said that the figures for the intrinsic death-rate of avertin only applied to the first 30,000 cases reported in the literature. It was conceivable that, in the future, with improved technique and better appreciation of the properties of avertin, the mortality would be considerably less. He was now using a 6 per cent. solution of gum acacia instead of distilled water as a solvent with, he considered, better results.

Dr. R. WATERS (Madison, Wis.) detailed his experiences with the intravenous administration of avertin. The injection was given quickly and the effect was instantaneous. Anæsthesia, however, only lasted ten minutes.

The CHAIRMAN had used avertin, and the impression left on his mind was that the chief use of the drug was for induction. He regarded the ether test for depth of anæsthesia, referred to by Dr. Parsons, as too severe, and felt that he liked the patient to show a response to an inhalation of strong ether vapour. Although anæsthesia was light during the recovery period, there was muscular relaxation and it was necessary to support the jaw. Even with the greatest

care in preparation he had had cases of rectal irritation. He inquired if Dr. Parsons could give any information concerning the keeping qualities of the solution of avertin in amylene hydrate. Dr. E. C. HAYES (Christchurch, N.Z.) asked if avertin could be used for young children, while Dr. S. JOHNSTON (Toronto) questioned the value of the drug for nose and throat operations on account of delayed return of the cough reflex. Dr. M. E. BOTSFORD (San Francisco) concluded that the barbiturates—for example, sodium amytal—were of more use than avertin. With the latter drug, patients did not regain their normal mental outlook for some days. The fact that avertin should not be administered by a nurse was a practical difficulty.

In reply, Dr. PARSONS stated that the solution in amylene hydrate kept indefinitely. He himself questioned the advisability of avertin anæsthesia for nose and throat operations. There was no reason why the drug should not be given to young children.

Pernocton.

Dr. E. I. MCKESSON (Toledo, Ohio) read a paper on Pernocton. This drug, he said, was designed to remove all the psychic element from induction and, in ordinary doses, to have a large margin of safety. It should not be used to produce full surgical surgical anæsthesia; this should be attained by the superimposition of a volatile anæsthetic. The drug was given intravenously, for this route was subject to better control.

Pernocton was the sodium salt of secondary butyl beta-bromallyl barbituric acid and, chemically, it was related to sodium amytal. The average dose necessary to produce unconsciousness was grs. $4\frac{1}{2}$. Narcosis was accompanied by an average fall of blood pressure of 14 per cent., and weight for weight pernocton was twice as powerful as sodium amytal. The post-operative recovery period was comparatively short and was characterised by drowsiness and amnesia. He had not observed the restlessness frequently seen following the administration of sodium amytal. In some cases there had been post-operative vomiting and he was inclined to attribute this to undue taste in making the intravenous injection. Pernocton was given in a 10 per cent. solution in the proportion of 1 c.cm. to every 30 lb. of body-weight. Not more than 1 c.cm. of the solution should be given per minute.

Dr. McKesson concluded by saying that pernocton had the following advantages over sodium amytal: (1) there was almost complete absence of excitement during the recovery period; (2) there was no fall in blood pressure; (3) pernocton had a more powerful hypnotic effect; (4) the solution was issued ready for injection; (5) there was a smaller volume to be injected; (6) there was a shorter period of unconsciousness.

Prof. W. WEBSTER (Winnipeg) questioned the advisability of giving "shot-gun" anæsthetics. Patients frequently received morphine, hyoscine, pernocton, or avertin, followed by N_2O or ethylene, and perhaps ether in addition.

Dr. R. HARGRAVE (Toronto) asked the value of pernocton in obstetrics.

Dr. MCKESSON, in reply, said that, in the attempt to obtain balanced anæsthesia, we had come to rely more and more upon the multiplication of anæsthetic agents. He was unable to give a considered opinion about the value of pernocton in obstetrics. The drug was in close chemical relation to sodium amytal.

SECTIONS OF PUBLIC HEALTH AND TUBERCULOSIS.

At a joint meeting of these two sections, Prof. S. LYLE CUMMINS (Cardiff) opened a discussion on

Primitive Races and Epidemiology

with a paper on Tuberculosis in African Natives, when brought into contact with Civilisation. In 1927, he said, he joined the South African Tuberculosis Research Committee in an inquiry into the disease as met with in

NATIVE MINE-WORKERS ON THE RAND,

with especial reference to the question whether mining on the Witwatersrand was a phthisis-producing industry because conditions favoured the lighting-up of old foci or because they rendered possible infections from without that would not occur apart from such conditions. Careful tuberculin tests showed that, contrary to expectation, about 80 per cent. of the Rand workers gave positive reactions, so that they were obviously not dealing with tuberculosis in virgin soil. The clinical types of tuberculosis met with in the Mine Hospitals of the Rand fell into two categories: the acute fatal cases, and the more chronic cases which were in a fit state to be repatriated. Most of the fatal cases occurred in the younger men, and were apt to occur soon after their arrival in the Rand.

The evidence all tended to show that most of the acute tuberculosis of natives on the Rand was due to the lighting up of old foci rather than to infection from without acquired for the first time in the course of mining work. The foci were not necessarily very old; indeed, the older the foci, the smaller the probability of their lighting up. It was the young mine recruit, arriving with larval or childhood lesions still active in the tracheo-bronchial and other glands who was in danger of acute generalisation of his infection when exposed to the combination of unfavourable physiological conditions implied in the exchange of the native way of life for life and work in the mines of the Rand. The lesions found at post-mortem were such as could only be produced by generalisation through the blood stream from a pre-existing lesion. Prof. Cummins here showed a number of lantern slides, illustrating some of the types of lesion seen in African natives. In these young mine recruits health and working capacity were maintained until under the physiological stress from the new conditions encountered, the young men with active larval lesions suddenly sickened and rapidly went downhill.

Under these circumstances nothing, said Prof. Cummins, could be expected from any form of prophylactic vaccine administered on arrival at the mines. Something might be accomplished in the future by immunising processes applied in infancy or childhood, but at present this was impracticable, and all that would be possible for a long time to come was to endeavour to improve the environmental conditions of the mine natives. The women and children of the Rand, if they developed the disease at all, exhibited, as a rule, a much more benign type of illness. The essential first step in prophylaxis consisted in affording to the natives in their territories conditions of life which ensured good nourishment, and in building up a sound medical service.

POST-MORTEM EVIDENCE.

Dr. J. HARVEY PIRIE (Johannesburg), who followed, based his remarks on a series of over 700 post-mortem examinations on natives working in the gold mines of Witwatersrand. The total number of deaths on

the reef were 1200 a year, with or without silicosis, while five or six times this number were repatriated. The fate of these latter was not known with certainty though no doubt many of them died within a short time. In one-third of those examined the tuberculosis was complicated by silicosis, all these cases being in long-service natives, showing that although silicosis might predispose to tuberculosis it did at the same time appear to render it a chronic disease. Two-thirds of the cases were of uncomplicated tuberculosis in young men in their twenties, with very short service. In them tuberculosis was predominantly an acute generalised disease. Age per se was evidently not a predisposing factor, since the same type was also seen in men of 40 and 50 years. A large proportion of these cases died within their first three months of service. Acute cases were usually T.B.+, contrary to expectation. The route of invasion was overwhelmingly respiratory. Bacteriological examination showed a complete absence of the bovine type of bacillus. A striking feature was the early generalisation of tuberculosis, sometimes as generalised miliary tuberculosis in which it was occasionally difficult to find the source of the spread. The glands sometimes showed extensive laxation, but were more often hyperplasic. The spread from thorax to abdomen was by the lymphatic paths, as was clearly seen by the pigmentation in men who had worked for some time in the mines. It was very common to find gross lesions involving liver and spleen. The kidneys were less often and less severely affected. In the lungs the lesions most commonly seen were of a broncho-pneumonic type, usually from the breaking down of caseous glands. A few cases were found with healed scar tissue, and a few with chronic fibro-caseous lesions; it was probable, however, that a few more cases of this type would be found among repatriated men. Calcified foci were found, but were such as would have been missed even on careful post-mortem examination in the absence of preliminary X ray evidence of their existence.

LABORATORY EVIDENCE.

Prof. J. G. FITZGERALD (Toronto), speaking on Laboratory Evidence as an aid in early recognition of Tuberculosis in Contacts, said that the laboratory procedures to which he wished to direct their attention and which might be of value in diagnosis were the tuberculin complement-fixation test and Caulfield's inhibitive test. These methods, though valuable, had definite limitations in that they could only be used where adequate laboratory facilities were available, and where there were opportunities for repeated and continuous examination of the blood of contacts under suspicion. A large number of cases that were negative clinically were shown under these tests to be suffering from tuberculous disease. The fact that positive serological findings were well in advance of clinical symptoms made diagnosis possible at a much earlier period. Three to eight tests might be necessary over a period of four or five years. Only trained and skilled workers were competent to carry out the tests. Attention was drawn both to the work done at Christie Street Hospital, Toronto, in correlating the results of the serological findings with post-mortem findings, and to the high proportion of cases in which these findings agreed.

RACIAL INCIDENCE IN BRITISH COLUMBIA.

Dr. C. H. VROOMAN (Vancouver) said that about 70,000 of the total population of 600,000 in British Columbia was about equally divided between Indians, Japanese, and Chinese, and that vital statistics for the last nine years showed that this small section of the population was responsible for nearly 40 per cent. of the total deaths from tuberculosis. Among the white population the rate of deaths due to tuberculosis was one out of every thirteen; among the Japanese one out of every six; among the Chinese, one out of five; among the Indians, one out of three. This striking difference raised the question of a racial susceptibility to tuberculosis, and in order to answer it a survey was begun of the Indians of British Columbia, under the direction of Prof. H. W. Hill, of the University of British Columbia, the clinical portion of the survey being the responsibility of the speaker. Dr. Vrooman gave the following clinical conclusions arrived at from the study. The incidence of active pulmonary tuberculosis among the Indians of British Columbia amounted to at least 6 per cent. of the population; if to this were added the suspect and the active non-pulmonary cases the incidence would be at least 10 per cent.

Tuberculosis tended to appear at a much earlier age among the Indians than among the whites, pulmonary tuberculosis being a common disease among the Indian children between the ages of 5 and 14. Climate had no relation to the incidence of Indian tuberculosis, nor did the cases show any more tendency to heal in the dry climate of the interior than in the wet climate of the coast.

While with the Indian tuberculosis was comparatively new disease, with the Japanese and the Chinese the susceptibles should have been weeded out long ago. The higher incidence of tuberculosis among these races than among the whites might be partly accounted for by the fact that they lived in more crowded quarters and were much less careful in their sanitary habits. More data were required to decide how far the problem was also a racial one. Dr. Vrooman's general tentative conclusions, however, were that, owing to the method of living and lack of sanitary care, the Indians, Chinese, and Japanese were exposed, especially in childhood, to more massive doses of tubercle bacilli than were the white population, but that neither massive infection nor economic conditions altogether accounted for the excessive incidence of tuberculosis among these races as compared with the whites. There seemed to be a definitely greater racial susceptibility to tuberculosis among these races as compared with the white race.

DISCUSSION.

Dr. R. G. FERGUSON, Dr. A. S. M. MACGREGOR, Dr. HARRIS, and Dr. D. A. STEWART took part in the discussion. In reply, Prof. CUMMINS again emphasised the bad effects of breaking away from accustomed modes of life. Racial factors did tell, and young natives brought into industry would be liable to break down. If a hereditary factor entered into the question it appeared to him more likely that what was transmitted was not immunity or resistance as such, but rather the power of rapidly developing an increased resistance in the presence of infection.

Antituberculosis Schemes.

Discussion was opened by Dr. MACGREGOR (Glasgow) with a paper on General Antituberculosis Schemes. He pointed out how greatly anti-tuberculosis campaigns had stimulated general public health measures for the common welfare, and had helped to direct the broad policy of preventive medicine along its present channels. Discussing some of the administrative measures in operation for reducing sickness and death due to tuberculosis, Dr. Macgregor said that the tuberculosis dispensary

was most efficient when closely related to, or forming an outpost of, a public health organisation. In cities such as Glasgow where much chronic respiratory disease existed the differential diagnosis of chest affections became an important and often difficult duty, with the result that tuberculosis dispensaries tended to become centres for the diagnosis and treatment of a variety of chronic diseases of the lungs. As effective instruments of detection these clinics were confronted with great difficulties in tracking down incipient tuberculosis. Protection of the contact was not so simple a matter as had at one time been believed. The results as regarded early diagnosis and treatment in the more acute type of phthisis prevailing among young adults were disappointing, the type of disease still tending to be advanced when detected, and efforts to control it being defeated by its natural history. This persistence of young adult phthisis constituted a problem for special investigation. Institutional provision took the form of sanatorium or hospital, or of both combined, the relative proportion of each varying according to the circumstances of the area and especially its housing conditions.

Under the housing conditions prevailing in Glasgow domiciliary treatment, said Dr. Macgregor, became an impossibility, and the preventive problem had to be faced on lines of generous provision for highly infective patients. The behaviour of phthisis under conditions of overcrowding such as prevailed in parts of Glasgow illustrated the powerful nature of the protective forces at work. Administration, broadly speaking, proceeded on the principle of providing suitable care and treatment for the affected individual, preventing as far as possible massive infection of contacts and improving housing and other environment. Dr. Macgregor drew attention to the remarkable fall in phthisis at later ages which had taken place in both sexes but especially among women, although tuberculosis as an acute infection of young adults had remained practically unaffected. Non-pulmonary tuberculosis, whether from bovine or from human infection, had declined at a still more accelerated pace. It was noteworthy that the greatest fall had taken place in abdominal tuberculosis, and since these cases were mostly bovine in origin, it was probable that the greatly increased practice of pasteurisation of ordinary city milk was responsible for some degree of protection against transmission of this form of tuberculous infection.

CAMPAIGN IN QUEBEC.

In a paper read by title, Dr. J. A. BAUDOIN (Montreal) gave a number of statistics from the year 1912 to show the necessity for the antituberculosis campaign in the Province of Quebec. Two-thirds of the tuberculosis deaths occurred in the important 15–24 age-group, pulmonary tuberculosis claiming 84 per cent. of the total deaths from tuberculosis. The campaign carried out in the province included antituberculosis clinics, which chronologically were the first organised weapons in the campaign, and of which there would be 20 by the end of the present year; hospitals, including sanatoriums, giving nearly 1600 beds, which, however, were only half the number needed in view of 3000 tuberculosis deaths; Grancher's system which had been in operation since September, 1929; summer camps—many of which worked in coöperation with the school medical service—where thousands of children spent an average of three weeks; and B C G vaccine. This last work was initiated in Quebec in 1926, the vaccine being prepared at the bacteriological laboratory of the University of Montreal. A follow-up report of as many vaccinated children as could be traced showed that the total tuberculosis death-rate among the vaccinated new-born babies in contact either with persons having positive sputum, or with clinically active or suspected cases of tuberculosis was 3·4 per cent., as compared with 25 per cent. found in similar control groups of unvaccinated babies in France and Roumania. Over 1000 new-born babies had been vaccinated, no reaction or ill-effects following in any case.

CANADIAN TUBERCULOSIS ASSOCIATION.

Dr. R. E. WODEHOUSE (Secretary of the Association) said that in Canada they had no counterpart of the British uniform arrangement. Their five cardinal activities were: educational activities, institutional care of the tuberculous; chest diagnosis; home visiting nurses; after-care. The field work in regard to tuberculosis in Canada was in the direct charge of the Provincial Department of Health and the municipal authorities in the different provinces. On the other hand, the institutional care of the tuberculous for most of the population was under the direction of other than Governmental departments, aided by standard or statutory contributions from the provincial Government in the case of the indigent. With a few exceptions the chest diagnostic work, as far as civilians were concerned, was carried on through reference by the practising physicians to the travelling diagnostic clinics, usually staffed by ex-sanatorium personnel. The follow-up or home visiting nursing services and the school medical inspection were not available uniformly over Canada, nor were they always adequate for the need. With regard to after-care or village settlements they were at present marking time in Canada with a view to copying the most useful and economic practice evolved elsewhere. Among the more exceptional activities carried out or contemplated by the Association were: the stimulation of routine examination of presumably well school-children; the furthering of study schemes relating to the care of North American Indians; the organisation, in conjunction with the University of McGill, of a study of 5000 employees in five types of employment; the provision of a complete public health service for the entire population of Prince Edward Island; and a proposal to take 50 full-time medical officers of health to Europe.

SECTION OF MENTAL DISEASES AND NEUROLOGY.

Dr. A. T. MATHERS (Winnipeg) being in the chair, a discussion on the classification of

Brain Tumours

and its practical application was opened by Prof. WILDER PENFIELD (Montreal). The surgery of brain tumours formed, he said, only a small part of the work of a neuro-surgeon, and any classification of them should lend itself to a practical application. The classification he had adopted was combined work of many people. It provided a basis for prognosis, treatment, and analysis. Prof. Penfield then outlined some of the work done which had led up to the fairly wide adoption of the classification of gliomata with which the names of Bailey and Cushing were associated. Gliomata, he said, were first described by Virchow. Horsley gathered over 500 verified specimens upon which Tooth did his work, of correlating microscopic pictures with degree of malignancy. Roussey and his associates attempted a classification in 1924. Bailey and Cushing published

the results of their investigations in 1926 in which they pointed out the possibility of prognosis by microscopic classification. After showing diagrammatic drawings of various cells, with photographs of ventriculograms and encephalograms obtained from his own clinic, Prof. Penfield outlined the various classes of glioma given and described the characteristics of each. Following are the seven types of glioma which might be differentiated :—

1. Neuroepithelioma.
2. Spongioblastoma multiforme.
3. Medulloblastoma.
4. Oligodendroglioma.
5. Polar spongioblastoma.
6. Astrocytoma.
7. Ependymoma.

He went on to discuss tumours of the sheaths of the nervous system, these including meningeal, fibroblastoma, perineural fibroblastoma, and neurofibroma or of von Recklinghausen's disease, describing cases of each which he had treated. When surgical intervention was considered necessary, he favoured radical procedures.

Dr. HENRY WALTMANN (Rochester, Minn.) remarked that interest in a disease followed the development of successful therapy. In the treatment of tumours of the brain the great necessity was accurate pathological diagnosis at the operating table. He discussed the resistance of the host to malignant growth, and asked Prof. Penfield whether he thought that brain tumour was likely to follow injury to the head.

Sir JAMES PURVES-STEWART (London) reminded his hearers that before the days of Horsley the mortality from brain tumours was 100 per cent. He stressed the importance of structural as well as focal diagnosis and advocated the wider use of ventriculography and encephalography for diagnosis.

Dr. A. W. ADSON (Rochester) said that rapid microscopic diagnosis was coming into neuro-surgery as it had come into general surgery. He agreed with Prof. Penfield on the importance of simplifying classification of the gliomatas. His own attitude to intracranial surgery was more conservative than that of Prof. Penfield; he removed encapsulated tumours only provided he felt sure that the patient was going to be benefited thereby.

Prof. WILLIAM BOYD (Winnipeg) spoke of the value of newer methods of preparation of tissue for microscopic diagnosis. He felt that while these methods were not of practical value at present, they would undoubtedly lead to simpler and more rapid means of differentiation in the future. Hydrocephalus, he said, might be the result of relatively small tumours of the cortex; was it due to pressure downwards and consequent narrowing of the aqueduct, or to pushing of the brain to one side and consequent pressure on the great vein of Galen? He thought that Bailey and Cushing had not emphasised sufficiently the mixed microscopic picture frequently met with in gliomata.

REPLY.

Prof. PENFIELD said that in spongioblastoma multiforme the vessels showed typical changes in the vicinity before the tumour cells could be seen. He thought that encephalography was to be avoided where a lesion in the posterior fossa was suspected; ventriculography, too, was a dangerous diagnostic weapon. Operation should be performed as soon after ventriculography as possible. One of the reasons he preferred ventriculography to encephalography was because the entrance of the ventricular needle into the brain frequently gave valuable information. He emphasised the necessity of competent interpretation of ventriculograms. He felt that the operative approach to tumours of the brain—conservative or radical—was still an open question. He agreed with Prof. Boyd that hæmatoxylin and eosin, and Mallory's phosphotungstic acid methods were the most practical. While unable to explain the production of hydrocephalus in the cases Prof. Boyd had mentioned, he had observed that a decompression not over the tumour site did not reduce the hydrocephalus, but resulted in destruction of tissue between the decompression and the ventricle.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

AT the second session of this Section Prof. D. S. MACKAY (Winnipeg) took the chair, and a paper entitled

Albuminuria of Pregnancy and its Late Results

was read by Mr. J. BRIGHT BANISTER (London). Albuminuria, he said, was the commonest abnormality in pregnancy and labour. In a series of 6000 cases of pregnancy which he had investigated he found that some 30 per cent. suffered from albuminuria, but this was usually transient. Comparatively little was known about the subject, because after-histories were apt to be incomplete. All investigators should cover a period of at least five years, and the collaboration of a general physician should always be obtained in treating a case of albuminuria after delivery. Cases might be classified, as suggested by Dr. Standen, into: (1) those in which there is albuminuria with vomiting in pregnancy; (2) those with a low kidney reserve; (3) frank nephritis complicating pregnancy; (4) pre-eclampsia; (5) eclampsia. In approaching the subject Mr. Banister set himself the following questions: Is a patient who develops albuminuria likely to suffer from a recurrent attack in a subsequent pregnancy? Is a patient with chronic nephritis likely to suffer from progressive deterioration of kidney function during a future pregnancy? Does eclampsia recur in subsequent pregnancy? What rôle does albuminuria of pregnancy occupy in the ætiology of chronic nephritis? He investigated the records of 30,000 cases of pregnancy in various London hospitals and found 1700 of them required some treatment during pregnancy, and in 86 of these albuminuria recurred more or less severely in subsequent pregnancies. The variety of the conditions from which these patients suffered was sufficient to preclude any precise conclusions, but he had arrived at certain general deductions to answer his questions. He did not believe that a patient developing albuminuria in one pregnancy was particularly liable to a similar complication in a subsequent gestation. In cases with low kidney reserve and chronic nephritis the condition was aggravated by subsequent pregnancy. He thought that some 30 per cent. of cases of pre-eclampsia and eclampsia suffered from toxic condition in a subsequent pregnancy. The shorter the time that the albuminuria persisted the smaller the risk of this complication afterwards. In considering the course which a subsequent pregnancy would take a raised blood pressure was the cardinal sign. Where the blood pressure was up to 150 mm. for any length of time, then permanent damage was indicated and likely to cause trouble later. In tracing the future of these cases and preventing, if possible, recurrences, early diagnosis and early and thorough treatment were essential. The treatment should not be carried on medically for too long, and should recovery not be noted in (say) seven days, then radical treatment should be started. He felt that Cæsarean section might have a scope in the treatment

of the severe toxæmias of recent origin. Mr. Banister concluded by stating that in the light of present knowledge it was impossible to give an answer to the question what was the rôle of albuminuria of pregnancy in the ætiology of chronic nephritis.

Prof. O. BJORNSON (Winnipeg) thought that early emptying of the uterus was indicated in cases which did not rapidly respond to treatment.

Dr. J. HOLLENBERG (Winnipeg) asked for Mr. Banister's experience of the value of Stroganoff's treatment.

Dr. J. E. STACEY (Sheffield) agreed with Mr. Banister about the significance of raised blood pressure. He said he examined the blood pressure regularly in every antenatal case, and had found that cases with blood pressure of more than 130 mm. tended to show signs of toxæmia in later months. He thought there was a definite relationship between albuminuria and antepartum hæmorrhage in subsequent pregnancies. In an investigation of 500 cases of antepartum hæmorrhage he had found that 37 per cent. of women subsequently pregnant developed toxæmic symptoms. They usually had a raised blood pressure. These cases were often associated with confusional states or even mania. Sepsis was very commonly associated with albuminuria. He did not agree that induction should be done at seven days; this was too early.

Prof. H. BERGLUND (Minnesota) said he only induced labour where there was deterioration of the patient's condition or a persistence of high blood pressure for six or seven weeks. He had had a few patients whose albuminuria was eliminated during pregnancy, but who died a few months later from puræmia. He had also known patients with progressive nephritis which began in pregnancy who had lived for many years. He felt that repeated pregnancies led to progressive damage of the kidneys.

Dr. T. G. STEVENS (London) was in general agreement that pregnancy should be terminated when reaction to treatment was slow. He strongly deprecated Cæsarean section in the treatment of this condition.

Dr. M. BASDEN (London) said she had performed Cæsarean section in a number of cases of severe toxæmia—never in eclampsia—with good results and with no maternal deaths.

Mr. COMYNS BERKELEY (President of the Section) recalled that Kellogg gave the name "recurrent toxæmia of pregnancy" to those cases which gave no clinical manifestations of chronic nephritis when not pregnant, and thought that 8 to 15 per cent. of pregnancy toxæmias belonged to this group. Kellogg believed these cases might turn out to be those of a faulty renal balance, in which renal insufficiency developed under the added load of pregnancy. Stander and Beckham had described a group which appeared to be the same and which they called low reserve kidney. Young agreed with Kellogg that women with a toxæmic history had resident within their body some morbid influence—an *x* factor—not inconsistent with good health when not pregnant, but inconsistent with the normal continuance of pregnancy to term because of the placental damage which he regarded as the cause of eclampsia. Young thought this *x* factor might be of an infective nature —e.g., chronic endometritis, metritis in primiparæ. Gibberd did not agree with these views. He found that in 13 per cent. of patients who had had at least two pregnancies, all of whom had healthy kidneys, signs of renal damage persisted for a year or longer after the termination. These, therefore, had become chronic nephritics. The average time between the first notice of albuminuria and the termination of pregnancy was nine weeks.

"We believe," said the President, "that we have obtained evidence showing that in cases in which toxæmia occurs in successive pregnancies there is really in all a pre-existing chronic renal damage not detected by the ordinary methods of clinical examination."

Dr. S. KROPINSKI (Winnipeg) thought that induction should not be resorted to too early, since in many cases the condition continued subsequently.

Mr. BANISTER, in reply, denied that he had recommended Cæsarean section in treatment, and said he would not suggest anything detrimental to safety of the patient in obstetrics. He would only consider Cæsarean section in fulminating eclampsia, and he thought the operation was overdone throughout the world. He did not think it justifiable to lay down a course of treatment, for the treatment of every case should be based on the clinical examination. If there was no improvement in seven days induction should be carried out, but, on the other hand, if there was any improvement at all it might continue. He was impressed by Stroganoff's treatment, but was a little afraid of the chloroform anæsthesia.

Hypertonic Saline in Toxæmia.

Prof. V. J. Harding (Toronto) read a paper on the Effects of Hypertonic Saline in the Toxæmias of Later Pregnancy. He had previously shown, he said, that in the treatment of eclampsia the limitation of salt was the essential factor rather than the withdrawal of protein and fat from the diet. High protein and fat diets were not only innocuous but actually beneficial, provided they were salt-free or salt-poor. The salt-free treatment of parenchymatous nephritis was well known, and the deleterious effect of sodium chloride and sodium bicarbonate had been demonstrated clinically and experimentally. Recently a tendency to the use of dehydrating agents, such as magnesium sulphate and ammonium chloride, had suggested that hypertonic saline might improve pregnancy toxæmia. A series of four cases was treated with hypertonic saline. One was a normal case as a control; the second case was a mild toxæmia of doubtful origin; the third and fourth were definite pregnancy toxæmias. Two well-defined criteria for estimating the extent of a toxæmia of later pregnancy were raised blood pressure and albuminuria. In the first two cases the injection of 300 c.cm. of 10 per cent. saline gave rise to some thirst and vomiting, but no increase in blood pressure or albuminuria. In cases 3 and 4, however, there was a well-marked rise in blood pressure, and the amount of albumin in the fourth case caused the recurrence of convulsions which had previously subsided under Stroganoff's treatment. It was noted in both these cases that the delivery of the child was rapidly initiated by the saline injection, and the treatment might be useful to hasten labour in cases of eclampsia. The observations indicated that hypertonic saline was contra-indicated in post-operative work in pregnancy where there was any indication of toxæmia, unless the pregnancy was to be simultaneously terminated. Salt restriction formed a necessary part of antenatal care, for a large intake of salt might precipitate a fulminating eclampsia. Prof. Harding conceived of the toxæmia of later pregnancy as a disturbance involving fundamentally a change in water distribution, which might show itself in many ways—e.g., by epigastric pain and vomiting, albuminuria with renal lesion, hypertension, œdema, convulsions, or peripheral liver

degeneration. His colleague, Dr. W. G. Crosbie, had referred to him an interesting case showing the relationship between œdema and blood pressure, in which the blood pressure and albuminuria were increased with œdema absent, and vice versa. The convulsions of eclampsia might be likened to the condition called "water intoxication" produced experimentally in animals by administration of water.

Dame LOUISE MCILROY congratulated Prof. Harding in his work, but said she felt the basis of her treatment of albuminuria had been destroyed; she wished to know of a substitute for sodium bicarbonate and potassium citrate in these cases. She would like to know the effect of this treatment on the liver, for she believed that this was the organ mainly affected in eclampsia. She considered that there were three problems in cases of albuminuria: (1) diagnosis of type; (2) when to terminate pregnancy; (3) when to allow further pregnancies. She needed the advice of a physician and a biochemist in the treatment of albuminuria. Induction of abortion was rarely necessary, because vomiting could actually be cured by treatment. She had found the treatment of repeated abortions by restriction of sodium chloride, together with thyroid and ovarian extract, very effective.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.

AT a meeting of this Society held on Oct. 2nd Mr. H. N. FLETCHER delivered a presidential address on

Ovarian Tumours,

giving details of 177 cases on which he had operated. Dermoid cysts, he said, appeared to be especially liable to complications, for of 12 in his series five were twisted, one was suppurating, and one was the seat of malignant degeneration. Two dermoids were found in loculi of multilocular pseudo-mucinous cysts. The more he saw of papillomatous cysts the more he regarded them as highly dangerous. They were usually described as locally malignant, because they seldom caused metastases outside the abdomen, and because if they ruptured and implantation occurred in the peritoneal cavity the daughter growths were usually surface growths and did not penetrate the organs on which they grew. None the less, such dissemination often destroyed life. Removal of the parent ovarian growths and of as much of the daughter growths as possible sometimes gave brilliant results, and Mr. Fletcher had had two such recoveries. On the other hand, four patients had had recurrence of ascites and masses in the abdomen, and had eventually died, one as late as three years after operation. Two other patients, both with bilateral tumours removed entire, and without dissemination, had recurrence and died. In all these cases the tumours were reported by the pathologist as papillomatous. The prognosis, if removal was accomplished before rupture was, however, usually good.

In malignant growths, which were often bilateral, and, if solid, not infrequently metastatic from some other organ, the prognosis was extremely bad. Of 17 cases, only two were known to be alive. Mr. Fletcher said he had remarked a loss per vaginam in several of these cases occurring after the menopause and referred to Robinson's view that this was due to a hormonal activity of the malignant cells. He deprecated the tapping of ovarian cysts before removal, owing to the impossibility of knowing whether they contained malignant or papillomatous elements. It was important to inspect both ovaries to open and examine any ovarian cysts removed, before the abdomen was closed, and to do a double ovario-salpingectomy and hysterectomy in all malignant and papillomatous cases whenever the conditions found and the state of the patient permitted. As an exception to this, in the case of a young woman, well below the menopause, with a single papillomatous ovary, it might be permissible to leave the other ovary if it looked perfectly healthy, and if the subsequent microscopic section of the removed ovary showed no sign of malignancy. But the patient should be kept under observation. Mr. Fletcher had had twice to remove the second ovary subsequently for similar disease. Finally, the patient and her husband should always have the possibility of radical measures explained to them before operation, and leave should, if possible, be obtained to do "whatever is best in the patient's interests."

REVIEWS AND NOTICES OF BOOKS

Diseases of the Skin.

By G. C. ANDREWS, A.B., M.D., Associate Professor of Dermatology, Columbia University, N.Y. London: W. B. Saunders Company. 1930. Pp. 1091. 55*s*.

THIS new text-book is noteworthy for the wealth and excellence of its photographic records of typical cases, and for that reason especially will rank as a valuable contribution towards the literature of the subject. Its purpose is entirely practical, the histo-pathological aspects of dermatology are almost ignored, and there are no micro-photographs. No less than 130 pages are devoted to the description and treatment of syphilis. Here the reader will derive profit from a study of the clinical illustrations, for examples are included of most of the typical cutaneous manifestations which, as a result of early diagnosis and the rapid effects of salvarsan therapy, can rarely nowadays be demonstrated on patients. Much space is devoted to treatment, and the student should note the line diagrams on p. 725, which purport to explain the occasional extravenous leak after an apparently successful entry of the vein This section would have been benefited by the inclusion of tabulated systems of routine treatment, with which in other subjects the volume abounds.

The chapter on eczema may confuse the uninitiated. The whole subject has been greatly complicated in recent years by the adoption of "allergy" as the explanation of all eczematous eruptions which can be clearly differentiated from those caused by special trades and occupations, or by organisms such as the pityrisporon (seborrhœa), the various mycotic (ringworm) fungi, and the cocci causing the common infections of the skin. The acceptance of the term involves a minute and painstaking search in each and every case of the disease for the presumed "antigen" to which the patient is sensitised, and this elaboration has led to the compilation of numerous diet tables and lists of cutaneous tests, the practical application of which would tax the resources and patience of the keenest investigator and the most

modern of dermatological clinics and nursing-home kitchens. The percentage of successes following the detailed use of this system is not encouraging in this country at least, and it is significant that the author himself seems to lay greater stress on the value of X ray therapy in actual practice. The technique of this is discussed in the greatest detail, not only for all stages of eczema, but for various diseases, such as psoriasis, in which other therapeutic measures are, in our view, equally palliative and greatly to be preferred in all but the most expert hands. There is no doubt, however, that the scope of X rays in dermatology is a wide one, and most authorities would agree with the author's view that it greatly exceeds that of the ultra-violet rays, which are of real value and have permanent effect only in the tuberculous affections.

Radium treatment and the Bucky or "Grenz" (border) rays are also discussed in greater detail than has hitherto been usual in text-books. The author's criticism that "there is an unfortunate tendency for an operator possessing a small quantity of radium to attempt the treatment of almost any lesion" is too true. His evaluation of the Bucky rays as inferior to X rays in general applicability and scope will be conceded by most authorities. An excellent chapter is included on surgical diathermy which in many hands threatens to supersede the knife and cautery, and with the new cutting devices offers particular advantages in combination with local anæsthesia in out-patient practice and the consulting room.

There can be no doubt that this book is a contribution of the first rank to the practical aspects of dermatology. It is in part highly technical, and for that reason will attract the trained dermatologist or intending specialist, while the many excellent illustrations will be of great help to the practitioner with dermatological leanings.

Lehrbuch der Urologischen Diagnostik.

By Dr. LEOPOLD CASPER, Professor at the University of Berlin; and Dr. EDWIN PICARD, Surgeon and Urologist. Leipzig: Georg Thieme. 1930. Pp. 473. M.48.

IN urology accessory means of diagnosis have been elaborated and brought to a very high standard of usefulness, and it was a capital idea on the part of the writers of the book under review to classify them, explain the technique of each, and bring all together into one volume. One section of the work describes in detail all the methods of examination of the urine, its microscopic investigation, with illustrations of the slides, and the chemical ways of identifying every sort of abnormal constituent. Investigation of the male genital secretions also comes under review, and a separate chapter is concerned with the modes of estimating the renal function by examination of the output of the kidneys. The cystoscopic pictures are beautiful and complete, ranging over all the diseases of the bladder and prostate, and including many plates showing the appearance of the bladder in certain extravesical disorders. Some special peculiarities which may be met with in the female bladder are discussed in a separate chapter. In the section on X ray diagnosis, after a careful analysis of the information to be obtained from the plain radiograms and pyelograms, the technique of many special procedures is described, such as oxygen pyelograms, which are particularly useful in confirming the presence of small stones in some situations, perirenal oxygen injection, lipiodol urethrograms, and various devices for examining vesical diverticulæ. At the same time the risks attaching to certain of these methods, notably gas distension of the renal pelvis and calices, are pointed out, and the contra-indications stressed. The reproductions of the X ray plates are remarkably good. Included in this part of the book is a chapter devoted to excretion pyelography.

This book on diagnosis will occupy a definite place in a urological library. The authors are to be congratulated on the care and thoroughness with which it has been compiled.

Mental Development of the Child.

A Summary of Modern Psychological Theory. By KARL BÜHLER, Professor in the University of Vienna. London: Kegan Paul, Trench, Trübner and Co., Ltd. 1930. Pp. 170. 8*s.* 6*d.*

Prof. Bühler has here presented in a very readable volume (the translation is really good) what might be called the formal treatment of the development of the child mind, and this he has done most admirably. But when he turns to deal with the affective life, with emotion, and with instinct, and with the material of everyday life with which emotion and instinct are at work, he falls very short indeed from giving us a complete picture of the mental activities of the child. Not only has he been deficient in this direction, but he has competely failed to give attention to much of the work that has been done on this side of child psychology. Is Prof. Bühler so close to his celebrated fellow citizen, Sigmund Freud, that he has failed to see the bearing of psycho-analysis upon child psychology? One would have believed that the subject matter of the child's early years had some influence upon the development of its instinctual and affective life, and that these effected some modification or enhancement of subh activities of the mind as learning, curiosity, and even intelligence. Prof. Bühler either does not think so, or his reading has not extended to these important fields of child psychology. By these startling omissions the author has seriously diminished the value of an otherwise excellent summary. Medical men in particular will feel the inadequacy of this book.

Quick Reference Book for Medicine and Surgery.

Seventh edition. By GEORGE E. REHBERGER, A.B., M.D., Johns Hopkins University. London: J. B. Lippincott Company. 1930. 65*s.*

TEN years ago Dr. Rehberger, of Phoenix, Maryland, set himself the colossal task of preparing a clinical, diagnostic, and therapeutic digest based upon a study of recent medical literature, and his efforts have so well served the needs of a wide circle of readers that the book has run through six editions, and the seventh is now before us. The plan of the book is to deal successively with general medicine and surgery, and ten special fields of practical medicine excepting psychiatry. Each disease or disorder is treated alphabetically, which avoids the necessity of an index or even of numbering the pages, so that we cannot state the number of these, although some indication may be given by the fact that the volume measures 3⅝ inches between the two covers. Each section includes a scheme for the history and examination of the patient, and a list of equipment for dealing with that part of the practitioner's work; at the end is an alphabetical list of all the drugs mentioned

in the book, with their physical, chemical, and pharmacological properties. Dr. Rehberger claims nothing as his own except the plan on which the book is based and the judgment with which he has selected the material. He has himself been an isolated country doctor and writes with a knowledge of the needs of the general practitioner confronted with disease in all its manifestations. His modest hope is that the book will be as useful to his fellow-practitioners as the compilation of it has been to himself. In the successive editions the character of the book has in no wise changed, but it has been constantly revised and added to. The latest edition contains, for instance, under the letter A, new data on acromegaly, allergy, aplastic anæmia, pernicious anæmia, and artificial respiration. The book is a remarkable single-handed effort.

Les vomissements chez le nourrisson.

By E. LESNE and MAURICE COFFIN. Paris: Gauthier-Villars et Cie. 1930. Pp 139. Fr. 25.

THE object of this monograph is to provide a classification of the types of vomiting met with in infancy which shall be comprehensive and based on an accurate determination of the ætiological factors. It is especially concerned with this symptom in the first few months of life. At the same time, the relative value of evidence obtained by clinical observation, radiological examination, and removal of gastric contents is critically discussed. Vomiting is classified under three main heads: episodic, usually of dietetic origin; severe paroxysmal, including intussusception and pylorospasm; and associated with stasis due to an organic stenosis. A chapter is devoted to the diagnosis and treatment of the disorders included in each of these groups. The authors divide pyloric stenosis into two types, an acute one in which spasm plays little part and a less common chronic one in which both stenosis and spasm are present, the latter tending to mask the diagnosis. Comparatively little importance is attached by them to the absence of a palpable pyloric tumour. A series of useful diagrams illustrates the radiographic appearances of the infant's stomach in health and disease.

British Journal of Ophthalmology.

IN the September issue Lieut-Colonel H. Herbert writes on the Future of Iris-inclusion in Glaucoma. This is the operation which he devised many years ago and which in his own hands has given the best results. He claims that iris tissue lying in a sclero-corneal wound accomplishes something in the matter of drainage that nothing else can do. Trephining, he maintains, is apt to cause a drainage which is either too much, with marked hypotony or too little, because of closure of the trephine hole. Owing to the fact that a cut iris remains permanently unhealed by scar tissue, iris tissue in a sclero-corneal wound forms an ideal filter. The operation must, of course, be subconjunctival, and the protection from infection must depend on the efficiency of the conjunctival covering. Even so, elaborate precautions are necessary against the danger of septic infection and even of sympathetic ophthalmia. For prophylaxis, Colonel Herbert advocates thorough disinfection of the conjunctiva with either 1 per cent. nitrate of silver or 1 in 3000 sublimate of mercury for two minutes, about half an hour prior to operation. A unique case of sympathetic ophthalmia occurred in a case when this precaution was accidentally omitted. The details of Colonel Herbert's technique will be found in an appendix to his paper.—Dorothy R. Adams describes a case of Ring Sarcoma of the Iris, a rare form of tumour.—T. W. Letchworth gives notes of an unusual complication of Traumatic Cataract, which, after being watched for some weeks while maturity was developing, burst through the posterior capsule into the vitreous chamber, the condition being probably caused by a particle of steel which had entered through the sclera and was embedded in the posterior part of the lens.—J. Bruce Hamilton contributes two articles, the first on *B. welchii* Infection of the Globe. In one case a particle of steel could be seen in the vitreous with a large air bubble attached to it. A hypopyon with high temperature supervened during the second day, when evisceration was performed and quickly relieved the symptoms. This was a case of mixed infection with *B. welchii* and some pus-forming organism. In the second case there was no hypopyon but intense pain. Evisceration and the injection of anti-gas gangrene serum were followed by uneventful recovery. This case was apparently due to pure infection with *B. welchii* which gives the picture of an acute abdominal crisis, whereas in cases of mixed infection the appearance is that of an ordinary pan-ophthalmitis.—Mr. Bruce Hamilton's second article will receive comment later.

British Journal of Children's Diseases.

IN the July–September number Dr. N. Gray Hill contributes a paper on the Ætiology of Acute Rheumatism in which he discusses the incidence of the disease, its sex and age distribution, family and heredity, type of child affected, race, social status, diet, climate, and geographical distribution, seasonal incidence, home conditions, Clarke's theory of transmission of the disease by the rat-flea, and the relation of juvenile rheumatism to scarlet fever and other infectious diseases.—In a paper on the Therapeutic Value of Streptococcus Antitoxic Serum in Scarlet Fever, Drs. T. Toyoda, J. Moriwaki, Y. Futagi, and S. Hoshizaki record their observations at the Government Isolation Hospital, Dairen, Manchuria on the use of antitoxin in the treatment of scarlet fever. Their conclusions are as follows: (1) scarlet fever streptococcus antitoxin reduces the mortality of the disease by half; (2) it has a remarkable effect on the symptoms due to the streptococcus toxin—viz., rash, fever, itching, vomiting, convulsions, and cardiac palpitation; (3) while the serum has some effect in reducing the incidence of complications it does not appear to have any effect on complications which have already developed.—In a paper entitled Metastatic Calcification: Notes on Twins Born Shortly after an Attack of Small-pox in the Mother, Dr. J. Pickford Marsden reports the case of a woman who gave birth to twins within a month of an attack of discrete modified small-pox. One twin apart from its puny condition was normal, while the other showed a discrete septic eruption, generalised purpuric spots, and calcareous nodules. The child died after showing signs of tetany. Post mortem calcareous nodules were found in the kidneys and lungs.—Dr. R. Hutchison and Dr. Alan Moncrieff report a Case of Primary Hypertension in a Child. The patient was a girl, aged 8½ years, in whom the systolic blood pressure ranged from 180 to 220 mm. Hg. The heart was enlarged with an accentuated aortic second sound and a gallop rhythm. Examination of the blood just before death showed high normal figures for blood-urea, and examination of the brain, blood-vessels, and kidneys post mortem failed to show any abnormalities, so that the case was one of primary or essential hypertension.—Dr. E. W. Goodall describes a Case of Cancrum Oris with Recovery and Subsequent Repair of the Defect by Plastic Operation. Photographs show the state of the patient before the operation at the ages of 7 and 15 and the excellent result obtained by a plastic operation performed by Sir James Berry.—Dr. J. H. Twiston Davies contributes a Note on Two Cases of Connective Tissue Nævus, the patients being a boy aged 8 years, and a girl aged 18. The abstracts from current literature are devoted to genito-urinary diseases.

THE LANCET.

LONDON: SATURDAY, OCTOBER 11, 1930.

PROGRESS OF CLINICAL SCIENCE.

WE print elsewhere the stirring address delivered by Lord MOYNIHAN at the opening of the Banting Research Institute at Toronto. He gloried in what had been achieved and must have fired his audience to a faith that one of the few things worth doing in life is to see that progress is quickly made in passage through some of the innumerable labyrinths wherein medicine has to pick its way of practical daily action. In particular, he urged upon his hearers the importance of the Hippocratic method of approach and a large portion of his address is taken up in deploring the sinful indifference of physiologists to clinical medicine. Since the rise of the laboratory and the permeation of all branches of biology by the experimental method, many writers and speakers have complained that the bedside, the case-history, and the fingers have too often been deserted for the test-tube, the microtome, and the guinea-pig. Of the reasonableness of these complaints there can be no doubt. Medicine, as Lord MOYNIHAN points out, would be a science of itself even if it was never applied, and it is axiomatic that every science must solve its own problems. In other words, clinical problems must be solved by clinical study and can be solved only in that way. The reason for this is plain enough. The difficulty in making progress in natural knowledge lies not in finding answers to questions but in framing the questions. Once a simple soluble question has been propounded, its solution generally needs nothing more than diligence and attention. And appropriate questions can be framed only by those soaked in the study of the subject; outsiders are often of help in the technical solution of problems but they cannot possibly tell medical men what the problems of medicine are. Only medical practitioners can do that. We believe, therefore, with Lord MOYNIHAN that the Hippocratic method of observation and inference must be the starting-point of all good medical research. It has, of course, its limitations, and the Galenic method of experiment is ever its natural supplement, complement, and corrective. Mr. WILFRED TROTTER some time since discussed very suggestively [1] the due and proper functions of observation and experiment in the pursuit of the medical sciences. Recognising that the questions are set by clinical observation, that in the past a good many answers have been obtained by the same means and that the method still has a fundamental part to play, he suggests that with the progress of knowledge the questions have become more complicated and difficult and that in very many instances we must, for fruitful results, resort to experimentation and, above all, experimentation on man. Animal experimentation has its necessary place; there is a huge field of which knowledge is essential where experiments on man are ruled out. But man is notably a peculiar animal; he walks upright; those who study fever may well ponder OWEN'S remark that "man is naked and is the only terrestrial mammal in that predicament"; he lives far beyond his natural span; and he has an impressive personality. The results obtained on mice cannot be transferred as such to man, and within its legitimate sphere human, or as Mr. TROTTER calls it, "direct," experimentation has been extremely fruitful. Lord MOYNIHAN urges the same point of view and welcomes Mr. TROTTER'S happy orientation of the position in calling animal experiment "collateral."

Why is it then that so much recent "medical research" has been centred in the laboratory rather than the wards? The plain answer seems to be twofold. In the first place a great many of those who spend their lives in contact with sick people do not happen to have curious minds and are not concerned to add to knowledge. Of surgeons Lord MOYNIHAN says, "men can live prosperous" (and we would add very useful) "lives without contributing a single fresh thought, the slightest modification of any known procedure, or the establishment of any new method to science or art." A curious mind is a gift from God. A man who has not got it has not got it and it is of no use complaining; a man who has it cannot keep it under—it was once said of one of our great leaders, "if BAYLISS was a bus conductor, he would make a good research out of it." One of the few really sad sights of modern medical research is the uncurious man trying to be curious and to engage in research as a matter of duty. And in the second place it should be frankly recognised that real clinical research, centring on sick people, is vastly more complicated, more difficult, more disappointing than inquiries which revolve round the experimental animal. The essence of experimentation is to reduce the variables to a minimum and to observe what has been deliberately produced rather than what is presented to us without our control. The processes of disease are never simple: the causes, changes, adaptations, compensations which operate make up pictures of amazing complexity. Small wonder is it, therefore, that so many investigators have got away from the wards into the comparative calm of the laboratory where results of some sort can be guaranteed. It needs a very restricted curiosity or a very stout heart to stick to the troubled frustations of the bedside. Yet there is no doubt that it can be done. Lord MOYNIHAN himself gave a striking demonstration of the possibilities when, years ago, he to all intents and purposes "discovered" duodenal ulcers and convinced doubters of the existence of a lesion almost unknown to the morbid anatomists. In recent years, too, Sir THOMAS LEWIS and his colleagues at University College

[1] Brit. Med. Jour., July 26th, p. 129.

Hospital have shown what can be done in real clinical research and for them, under the auspices of the Medical Research Council, there has been constituted the first recognised Department of Clinical Research at a large teaching school. One attaches, therefore, considerable importance to Sir THOMAS'S opinions on the subject.[2] He judges that though the quantity of clinical inquiry which finds its way into print is immeasurably large, its quality is deplorably low; clinicians have a "less rigid standard of truthfulness than physiologists," and there are many statements, purporting to be of fact, in the text-books which need verification. His remedy is to encourage, on the one hand, a habit of mind, and on the other the necessary facilities and armamentarium by which what he calls "clinical science" should be pursued in the same disinterested spirit in which English physiology has prevailed so well. As things have been, it has been difficult for any young man whose heart is set on such a course to pursue it. Ordinary hospital experience disperses his interests to a destructive degree, he gets no training in making concentrated attacks on individual problems, and his daily contacts with a world largely coloured with professional considerations do not make for the right atmosphere in which an essentially curious mind may come to fruition. Given opportunities, Sir THOMAS believes that the right men are available. Strangely rare as they have been in the past, we think he is right.

Let us pass finally to Lord MOYNIHAN'S complaints about the physiologists—that they have neglected hominal research, that they are aloof from medicine, that their science is playing truant. We believe that his contentions are mistaken or at least greatly exaggerated. In general, each science must solve its own questions and the questions come from natural curiosity. For surgery to tell physiology what it ought to be interested in is as futile as for a physiologist to attempt to guide the surgeon: freedom is as necessary in one case as the other. First-rate brains are seldom prepared to be interested in other people's problems, and physiology has long since established its own field and cultivated it with wonderful success. In particular, Lord MOYNIHAN exaggerates the neglect of man as a subject of physiological experiment. Dr. J. S. HALDANE and his disciples have consistently practised the study of man as a whole, and Prof. A. V. HILL has combined the most refined analysis of isolated tissues with an illuminating study of man's capacity to do muscular work—surely a topic of unusual medical importance. Lord MOYNIHAN says that physiologists pay too much attention to muscles—and that with muscular rheumatism still defiant! However, we hardly suppose that he expects, or would like, to have physiology reduced to an appendage to medicine. What he asks for, and this is certainly needed, is that more people well-trained in the methods and results of classical physiology should interest themselves in clinical studies, bending their minds particularly to the near-normal physiology which he calls paraphysiology. These persons will be primarily not physiologists but clinicians of a physiological upbringing. They are exactly those contemplated by Sir THOMAS LEWIS and the more there are of them the quicker will clinical science progress.

[2] Ibid., 1930, i., 479.

RISK OF IRRADIATION OF GERM-CELLS AND FŒTUS.

IN Central Europe the method of temporary sterilisation of young women by means of X rays has been accepted almost generally for more than a decade. Among conditions treated in this way are uterine fibromyomata, menorrhagia, dysmenorrhœa and various types of adnexitis; sterilisation may last from six months to two years according to the dose. Doubt has arisen, however, as to whether this method of sterilisation may not be fraught with the risk of impairing the development of germinal cells which it does not destroy. Malformations have been reported in the offspring of animals, both amphibian and mammalian, whose ovaries have been X rayed prior to conception, and the danger of pelvic irradiation during pregnancy has been repeatedly demonstrated. The possible effects of X rays on the young in utero are well demonstrated by the recent experiments of D. P. MURPHY and M. DE RENYI on albino rats.[1] Among 34 animals subjected to varying degrees of irradiation during pregnancy five cast litters in which gross defects were found in the young. Absence of toes or clubbing of feet occurred in one or more of the members of each of these litters, and the frequency with which defective young were produced appeared to vary directly with the degree of exposure. The deformities were not duplicated in a control series of 125,000 non-irradiated animals. But long before this some parallel cases in the human subject were recorded. ARCHENHEIM, for instance, described a four-year-old child with eye malformation, microcephalus, and intellectual disturbance who had been born after irradiation as a fœtus in utero. A similar case was described by E. STETTNER,[2] and among 76 other reported cases of children born at full-term following irradiation of the maternal pelvis during pregnancy, 18 were microcephalic and other developmental defects were exhibited by some of the remainder. Dr. J. S. QUIN called attention to the danger at a recent meeting of the Royal Academy of Medicine in Ireland; and a discussion[3] at Detroit last June in the annual session of the American Medical Association led to the advice: Always curette before proceeding with pelvic irradiation. So real is the danger, said the opening speaker, as to justify the interruption of pregnancy when an unsuspected pregnancy has been exposed to prolonged irradiation. It was agreed, however, that was no evidence to prove that a mere diagnostic irradiation during pregnancy did any harm.

But while irradiation of the fœtus in utero may

[1] Surg., Gyn., and Obst., 1930, l., 861.
[2] Jahrb. f. Kinderh., 1921, xcv., 43.
[3] Jour. Amer. Med. Assoc., 1930, xcv., 860.

be expected to give rise to abnormalities, owing to the selective action of the rays on embryonic tissues, the ill-effects of irradiation of the generative organs of either parent before conception are less well proven. They are certainly not constant. I. I. KAPLAN has recently set out [4] the case of a woman with severe pulmonary tuberculosis in whom termination of pregnancy was attempted by X ray exposures over a period of 14 days, and was finally accomplished by surgical interference. A subsequent pregnancy was normal in every way and ended with the delivery at term of a healthy child weighing 7½ lb., whose development has since been perfectly satisfactory. MURPHY has performed experiments in rats to decide whether the offspring irradiated before conception might transmit any abnormalities to the second generation, even though the first generation appeared to be healthy. He found that the numbers of young in the litters of irradiated rats were less than in the litters of control animals, and that the mortality was higher during the first month among the young of irradiated animals, but that abnormalities were no commoner and that the rate of growth did not differ materially from that of the controls. The second generation showed no evidence of ill-health or under-development which could be attributed to the grandmother's irradiation. A. LACASSAGNE and H. COUTAUD, however, observed [5] general dwarfing in the offspring of rabbits, whose ovaries had been irradiated previous to conception; the young were weakly and showed a high mortality during the first few months. L. F. DRIESSEN has observed [6] similar results in guinea-pigs, and in some cases the offspring have been sterile. K. SEYNSCHE reports [7] three cases of physical and mental defects in children which he attributes to irradiation of the generative glands of one or other of the parents, but W. SCHMITT joins issue [8] with him and is not convinced of the part played by irradiation in determining the abnormalities of these offspring. Opinion at the Detroit discussion was quite definite that ovarian irradiation prior to conception is harmless.

ATHLETICS AND THE MEDICAL CURRICULUM.

THE rôle of exercise in modern education is a source of solicitude, intermittent or perpetual, to most educational authorities. So far as schools are concerned, provision for ensuring the free development of the play instinct, having its manifold influence upon body and mind, is accepted as a matter of course, and no parent would contemplate the selection of a school which did not include among its amenities adequate opportunities for exercise. The relative proportions which mental and physical education should possess, and the possible evils of excessive application or exertion in either direction, form, however, a controversial issue, especially where the adolescent is in question, who is feeling the embarrassing claims of advancing maturity. At the universities participation in games, as in other forms of recreation, is left to the taste and discretion of the individual, who thus loses at a critical time the advantages of supervision. From time to time the thesis is submitted that undue prominence is given to athletics, both at schools, with the ægis of authority, and at universities under the spell of personal proclivities or collegiate rivalries; as a consequence a wrong sense of values may be created with, especially at the universities, a waste of time which should have been devoted to the more serious features of a future career. And such arguments as are advanced where university life is concerned, apply with special force in regard to the student in the medical school. For whilst here a certain liberality is conceded in respect to the variety of ways, of which exercise is one, in which young men may spend their leisure, medical students, more than those who are being trained, whether at universities or institutions, in other directions, are held to have arrived at a stage, even while in a state of pupillage, when they are face to face with the serious affairs of life. This is a consideration which led Dr. IZOD BENNETT, as dean of the Middlesex Hospital Medical School, at the opening of the October session, to view the public school training with its traditional athletic associations as an unfavourable preliminary to the pursuit of medicine. He said:—

"The masters at English public schools appear to cling to the belief that a rudimentary knowledge of classical languages is sufficient to secure true culture and future success. They are mistaken; while at the present time it is quite exceptional for a medical student to have received sufficient education in the classics to enable him either to decipher the medical works of the sixteenth century, or to write his mother tongue with real fluency. . . . Under the present regulations of the University of London the first examination in chemistry, physics, and biology may be taken from school, but although many students so escape the extra year of training in a medical school, our experience is that the standard of knowledge which they have acquired is quite inferior to that reached by students who begin their study of the preliminary sciences in our own institution. During a recent visit to the medical schools of Holland, I found that before being accepted as an undergraduate of a Dutch university, the student must pass an examination of proficiency not only in his own language but also in no less than three living foreign languages. I do not suggest that a similar standard should be demanded in this country, but I feel very strongly that if we seek to retain equality with other nations, it would be reasonable to ask that every medical student should receive at school sufficient instruction to enable him at least to read two foreign languages. Schools and universities of the United Kingdom have, in the past, gained for the country a reputation of pre-eminence in the world of sport, and I fear that the omission of reference in this report to such activities may prove disappointing to many people present. The Middlesex Hospital Medical School is an institution for work; more than that, it is an institution devoted to work of great severity and of a high intellectual quality. The policy of its council is to recognise this fact and to encourage it."

Dr. IZOD BENNETT'S words are very much to the point as far as the academic side of school

[4] Surg., Gyn., and Obst., 1930, l., 492.
[5] Gyn. et obst. rev. mens., 1923, vii., 1.
[6] Strahlentherapie, 1923, xvi., 656.
[7] Ibid., 1925, xxi., 600.
[8] Ibid., p. 608.

training is in question, though we doubt whether the medical schools, more than the centres of training for other careers, have a right to complain of the literary and scientific equipment of our school-boys. But as far as his words may be taken as attributing the faulty training of the schools to the demands of athletics—which he does not say—we think that the overhanging threats of examinations must act as a counter-weight. At medical schools the pursuit of organised sport can fairly be recognised as promoting between students a wholesome union, creating an atmosphere in which work can proceed in a spirit of good fellowship. The procedure at the formal openings of the medical schools almost invariably includes a summary of the school's achievements during the preceding year, and the applause with which a recital of athletic successes is announced and received is a proof that we have here a sentiment to deal with that cannot be disregarded. Further, although undue stress must not be laid upon individual instances, many examples can be found of medical students who have gained repute simultaneously in athletics and in the schools. The glamour of athletic success may attract students to a particular medical school or college of a university, and this can only be criticised if the authorities encourage the adherence of the athlete above all other considerations—a possibility which cannot be ignored in view of the restrictions in the London medical schools upon the admission of female students.

Admittedly the duration and severity of the medical curriculum make great demands upon the adolescent's energy. But time must be found for recreation, while it is often necessary to warn the conscientious young man that undue devotion to the mental side with neglect of the physical is a real danger. A valuable asset to the doctor is a strong constitution, without which success becomes problematic, notwithstanding high intellectual gifts and other advantages. In every profession the possession of good health is, of course, a prime factor in success, but nowhere is this fact more obvious than when we are thinking of our own calling. For the strain to which the doctor is submitted in the ordinary course of his life is perpetual, and also many sided; social circumstances as well as scientific problems require his perpetual attention; an organisation of the work into a routine can never be brought about. Ability to rely upon himself must not falter, and everything that adds to his own physical well-being will find its happy reflection in his patients.

ANNOTATIONS

THE AIRSHIP DISASTER.

THE airship R101 crashed almost at the commencement of its journey to India with the loss of 47 lives, including the Secretary of State for Air, the Director of Civil Aviation, and many of the men to whom we owe the development of airships in this country. Whatever may have given rise to the vessel's descent, it was the explosion of combustible gas in the envelope by which the navigators and passengers met their end. Nine years ago, when the R38 took fire on its trial flight over the Humber, the question in everyone's mind was whether the danger latent in hydrogen could not be obviated by the use of helium and some alternative to the petrol engine found. R101 was unique in that it was driven by Diesel engines, burning an oil which will extinguish a lighted match, but the gas was the same hydrogen as before. The safety of helium as a buoyant agent is widely known; it is not only non-inflammable but has hitherto resisted every effort to make it combine with other elements. Although widely distributed in nature helium is only obtainable on a commercial scale from the natural gas of Kansas, of which it forms 1·5 per cent., and its use has so far been confined to airships of the United States. The suggestion has been made that the high cost of this gas was a contributory cause of the disaster to the *Shenandoah*, because the number of automatic safety valves in the envelope were so far reduced, in the effort to prevent the waste of a gas so difficult to replace, as to impair its mobility. Nevertheless, when the accident did occur some of the crew owed their lives to the fact that there was no fire. It may well be that airship pioneers and inventors are ready to risk their lives beneath a gasometer of explosive gas, but the recent calamity turns the mind once more towards the possibility of using a safer buoyant agent. Everyone will be glad to learn that legislation is to be introduced into the United States House of Representatives to permit the exportation of helium for the use of aircraft of foreign Governments.

THE LOCKYER COLLECTION.

THE formal gift to Charing Cross Hospital of his collection of more than a thousand obstetric and gynæcological specimens was made by Dr. Cuthbert Lockyer on Oct. 4th in the museum of the medical school. The collection, which is said to be the finest of its kind in London, is the product of 30 years' work, and is supplemented by nearly two thousand microscopic sections of the actual specimens displayed, or of parallel conditions. Dr. Lockyer has provided a sum of £500, the interest of which is to be used for the maintenance of the collection in its present perfect condition, and he has himself prepared and published[1] a catalogue of the specimens for the use of those working in the museum. He has also presented a microscope of historic interest, once the property of Mr. J. H. Targett, who in the preface to the catalogue, is described as the first gynæcological pathologist of his day. Dr. William Hunter, who was present at the opening ceremony, spoke of this collection as the most important since John Hunter laid the foundation of the museum of the Royal College of Surgeons. The specimens, perfectly mounted, cover a wide field, and in addition to a remarkably complete range of common conditions, include most of the rare tumours of the female generative organs and an interesting series of specimens illustrating ectopic pregnancy. The catalogue has been so arranged as to act as its

[1] London: John Bale, Sons and Danielsson, pp. 297.

own index, and it embodies comments on the material which are likely to prove of value to the student. Speaking of the origin of the collection, Dr. Lockyer said that it was on the suggestion of Dr. William Hunter, in 1912, that he first sent his specimens to the hospital medical school; since then he had added to the collection, and had included several specimens of value contributed by his colleagues. Although a few rare pathological states are not illustrated, the morbid anatomy and histology of gynæcological diseases are amply represented; the collection is likely to prove of value, not only to students of the hospital, but to all those interested in the study of diseases of women.

ACHYLIA GASTRICA AND PERNICIOUS ANÆMIA.

To the *American Journal of the Medical Sciences* for September, 1930, Dr. W. B. Castle, Dr. W. C. Townsend, and Dr. C. W. Heath contribute a third paper describing their observations on the ætiological relationship of achylia gastrica to pernicious anæmia. Their previous papers showed that the interaction of normal gastric juice with beef muscle produces a substance that can take the place of liver in the treatment of pernicious anæmia. The present communication is concerned with the analysis of the two factors involved, the "intrinsic" in the gastric juice, the "extrinsic" in the beef. The tests were made on typical cases, a positive therapeutic result being assumed from a significant reticulocyte rise within ten days.

In the study of the intrinsic factor, beef digested with HCl and pepsin (U.S.P.) was first tested but caused no improvement in the patient. On the assumption that the intrinsic factor might well be another enzyme, normal gastric juice, heated to 70°–80° C. to destroy all enzymes, was added to the beef and pepsin. The result was again negative, and this was controlled later by the fact that excellent remissions were obtained in the same patients when the juice in the mixture was left unheated. It thus seems fairly certain that the effective substance is produced in the normal gastric digestion of protein, though not by the action of pepsin. The possible actions of saliva and of regurgitated duodenal contents were also investigated. Beef was chewed by a normal person, ejected, incubated, and finally digested in the presence of acid pepsin (U.S.P.). The result was negative until the pepsin was replaced by normal gastric juice. The examination of the duodenal contents was more difficult, but also more interesting. The procedure was as with gastric juice, but at a reaction of pH7. The result was unexpectedly positive, but it was found that beef, first digested with acid pepsin, and later incubated with normal gastric juice at pH7, also gave a positive result in the patient. For many reasons it was thought unlikely that the duodenal secretions contained the intrinsic factor, and it was easy to show that gastric ferments occurred in duodenal specimens obtained by the usual methods. But if the intrinsic factor can act at pH7, it would be important if comparatively pure specimens from the duodenum were found to be inert. This was achieved by means of a multiple-tube device, allowing samples of gastric and duodenal contents to be obtained at the same time while the pylorus is blocked. When this special duodenal juice was incubated with beef previously digested with acid pepsin the mixture produced no clinical improvement in the patient, though a reticulocyte rise to 4 per cent. occurred on the eighth day. Later substitution of gastric for duodenal juice produced a complete rise in reticulocytes to 28 per cent. in the same patient.

This result would appear to indicate that the intrinsic factor is secreted in the stomach, and the authors briefly discuss the possibility of rennin being involved. In earlier work no success had been obtained by treating patients with pig's gastric mucosa, previously autolysed with HCl in the incubator, but lately other authors have succeeded by using dried pig stomach. The previous failure is now attributed to the acid autolysis, which, incidentally, would have destroyed the rennin present. Further tests have now been made, using pig mucosa as fresh as possible, minced up and incubated with beef and acid pepsin. Although this procedure gave excellent remissions in patients, the authors do not seem to be convinced that the mucosa alone would not have done equally well. But they find that the essential substance in pig mucosa is much more thermo-labile than that in liver.

Less work has, so far, been devoted to the study of the extrinsic factor. Muscle protein was precipitated at the isoelectric point, washed and incubated with normal gastric juice with successful results, whereas wheat gluten flour similarly treated was inert. An attempt to purify the protein further met with failure, possibly through denaturisation. This very interesting communication ends with an exhaustive discussion of the work done and its significance.

A SILENT HOUSE.

A SOUND-PROOF music room is an old conception, but the possibility of a sound-proof house was newly demonstrated at Olympia during the recent Building Exhibition. The materials used for the construction of each of the rooms varied; the study was so closely panelled in African mahogany as to be almost impermeable to sound; cork parquetry on the floor and a muted typewriter helped to preserve an atmosphere of almost ecclesiastical repose. The furniture, of mahogany and also made to the design of Mr. Tristan Edwards, was utilitarian without being ugly. The dining-room walls were made of Canadian spruce set in three parallel partitions, an arrangement said to be not only sound-proof but heat-proof, cold-proof, and water-proof as well; a number of identical tables of African walnut could be scattered round the room or assembled to form a dining table of any dimensions required. The walls of the drawing-room were constructed of compressed wood fibre, an English product which is unusually resistant to water. A Sorbo rubber material underfoot gave a sensation of walking on cotton-wool. Silent gas fires were in every room, and the windows, glazed with ultra-violet glass, were set in steel frames. In the nursery a special arrangement of baffle boards in the upper ventilating flap of the windows allowed air to enter but excluded noise; equally, of course, the outer world and the rest of the house were insulated from the noise of the nursery. A rubber material on the floor was decorated with nursery pictures designed by Marie Petrie; the furniture was low and adjustable. There were no special points of interest in the silent bathroom except a mirror with a luminous frame which lighted the inspected face. The kitchen was built of insulating bricks, hollow in the centre; it was furnished with electric cookers and with a large double dresser across the lower shelf of which articles could be passed directly from the stove to the sink. The bedroom, furnished with extreme simplicity, contained

a box-spring mattress in the middle of the room, mounted on an arrangement of drawers which made it possible to dispense with a chest. Even the front door was approached silently across a rubber pavement, where a pattern of arrows directed at the entrance pointed the returning wanderer to his home. Although such complete isolation would be ideal for a study it might have its dangers if universal; it is possible to imagine the tenant in his sound-proof drawing-room oblivious to an alarm of fire. A more common occurrence would be neglect of the telephone, unless bells were to be fixed in every room.

PSYCHOPATHOLOGY AND PUBLIC SAFETY.

IN a letter which appeared in our correspondence columns last week, Dr. Frederick Dillon suggests the insufficiency, from the social aspect, of procedure in which legal requirements may seem to be adequately met. A youth of 17 who had described to the police, with dramatic detail, a murder he had committed was in due course brought before the bench of magistrates. When his story was shown to be false he was released with an admonition for telling deliberate untruths, the facile explanation that the motive for the escapade was a desire for notoriety being readily accepted. Dr. Dillon, however, pointing his argument by reference to a case in which a similar self-accusation had preceded an actual murder, shows the danger of what he calls "this surprisingly casual method of dealing with the case." But whilst agreeing with him as to the serious issue involved, we find little cause for surprise, since such lack of psychological examination is a commonplace. There is no regular machinery by which the pathological significance of disorders of conduct can be brought to light in court procedure, and in this case, even if the magistrates had been sufficiently informed to suspect its nature, it is not easy to say what steps they could have taken to obtain a skilled examination of the youth. Then if such an examination confirmed Dr. Dillon's hypothesis of mental abnormality, further difficulties of disposal and treatment would certainly arise. It may, indeed, be claimed that the law, having found the prisoner not guilty, had done all that could be expected of it, the only fault of the magistrates then being the violation of that old legal maxim about giving a judgment but not the reasons for it. The other example cited by Dr. Dillon recalls a case that occurred in Wales a few years ago when a youth, found not guilty of the charge of murdering a young girl, committed a second murder after his release. It was mentioned in evidence, apparently without comment, that the prisoner had a curious "hobby" which to the informed observer was plainly a pathological fetishism the recognition of which might have saved the second tragedy, although the application of such knowledge in the course of the trial might have involved peculiar legal difficulties.

We have progressed beyond the conception that the sole functions of a criminal court are to answer the question "Guilty or not guilty?" and allot penalties. By some people the intervention of the psychologist is still regarded only as an attempt to mitigate punishment, and when the intervention is on behalf of one party this view has at least apparent justification; when the advice of the expert is officially at the disposal of the court we recognise an attempt at understanding and correction that may have a value to society in achieving what punishment alone often fails to achieve. But there are further needs, and the ideal, at present impossible, is that every court should have at its disposal all available evidence or information by which modern psychological knowledge can assist it in understanding a case, not merely in the interest of the prisoner but for the protection of the public. The incident to which our correspondent has referred shows how magistrates, in the absence of technical knowledge or assistance, may fail to appreciate the significance of disorders of conduct with which they have to deal, and there seems no easy way of guarding against this failure. The difficulty can only be met by a wider diffusion of knowledge that will enable magistrates and others to recognise those cases in which mental abnormalities are likely to be glossed over by easy but insufficient explanations, and by providing facilities for expert examination when it is found necessary.

AN ESSAY IN SLUM CLEARANCE.

PORTSMOUTH is coming to grips with its slum problem. Dr. A. Mearns Fraser in his report for 1929 tells us that a survey has been made of houses unfit for occupation and closing orders issued in a number of cases. The town council has now to decide the terms upon which the tenants are to be moved to new municipal houses, an essential part of the Portsmouth scheme being that occupants of demolished houses shall be offered accommodation in the new council houses now being erected. The conditions of 58 tenants are given by Dr. Fraser as typical of many others who will be similarly displaced. Most of them are not in regular employment and they now pay no more than an average of 5*s*. 5*d*. per week in rent. They cannot, it seems, afford to pay more than 6*s*. 4*d*., whereas the lowest rental of a municipal house is 10*s*. 3*d*. If the scheme is to be carried out, a further subsidy in the form of rent reduction is not to be avoided, and the only question is, how to arrange a scale of relief? Banbury is cited as the only town that has such a scheme. There an abatement of 1*s*. per week is allowed for every child of school age down to a rental of 6*s*. 6*d*. This minimum rental is raised 1½*d*. per week for every shilling over 30 of the weekly income. Thus, a tenant would pay the minimum rental if he had four children of school age and an income of 30*s*. Out of 37 Banbury houses in the scheme 22 are let at 6*s*. 6*d*. The National Housing and Town Planning Committee has suggested a scheme to apply to families with a weekly income of less than 55*s*. and three or more children. If the income is between 45*s*. and 55*s*., the rent abatement is 3*s*. for the first three children and 6*d*. a week for each further child, with a maximum of 4*s*. If the weekly income is less than 45*s*., the abatement is 4*s*. for the first three children and 6*d*. a week for each further child, with a maximum of 5*s*. The Committee further suggests that the abatement shall apply to children under 14 years, older children still at school, and approved dependents; and that two-thirds of the cost of these rent allowances should be borne by the exchequer and one-third by the rates. Dr. Fraser thinks that at this stage the Minister of Health should be asked if there is any hope of State assistance for such a scheme as this. He points out that much more will be required than simply turning these tenants haphazard into new council houses and sending someone to collect the rent. After the sudden change from a slum to a modern dwelling, many of them will need education and encouragement in looking after their houses; others a firm hand to prevent them reducing their new environment to the condition of

the places they have left. With this object, Dr. Fraser favours the appointment of a well-paid manager trained in Octavia Hill's methods before any of the houses are let, so that she can make herself acquainted with prospective tenants and decide on the type of house best suited to each. The result will be followed with attention by housing reformers elsewhere.

THE OBSTINACY OF PARENTS.

THE reluctance of parents to the provision of treatment for their children is a difficulty that extends to all kinds of medical practice, and is a trial to the dentist, the oculist, the surgeon, and the school medical officer, as well as to the private general practitioner. It is perhaps the dentist working for an education authority who feels it most. In many areas where facilities are adequate less than half the parents are willing to make use of them. There may be various reasons for this—e.g., the fact that a small charge is made, the trouble of taking the child to the clinic, the desire to spare him what is deemed unnecessary pain, and perhaps the influence of the child's fears and protests. But the chief obstacle seems to lie in a curiously misapplied independence of spirit that rebels against interference, and still more in a deep ignorance of the need for any measures except in the emergency of acute toothache. The oculist has to face somewhat similar difficulties, the child's fear of a painful extraction being replaced by unwillingness to bear the ridicule of his fellows when he first appears in goggles. The parent is more directly concerned about paying for the glasses—a situation greatly eased by a plan of deferred payments. Many parents incur heavy responsibility from their failure to carry out the treatment of squint by periodically shading the better eye. The fault here is want of faith and persistence rather than obstinate refusal. On the other hand it was sheer recalcitrancy that caused a mother in Rutland, as recently noted in one of our summaries,[1] to refuse to allow her child to wear the glasses which she had been forced to obtain. Operations for tonsils and adenoids may be resisted on some of the grounds already cited, but more often because the risks of surgical treatment are exaggerated and its value insufficiently appreciated. The family doctor may feel it his duty to urge operation while he knows well that he will be blamed if minor ill-consequences result. He has not behind him the resources for persuasion possessed by the medical officer of an education authority—few of the school medical staff fail to testify their debt to the efforts of the teachers—but the family doctor has the advantage that parents regard him as a friend and not as an official. All doctors alike are hindered by the propaganda and specious promises of unqualified practitioners, and the greatest weapon in the cause of health and improvement lies in the enlightenment of public opinion. In public health and school work approved methods to this end are the travelling lecturer with cinematograph, the issue of leaflets, the writing of essays by the children with the inducement of prizes, and the award of honours, flags, or medals to schools with the best records. When all is said and done it remains the personal exhortation by the doctor, however much expenditure of time it requires, from which the best value is to be expected. A troublesome proclivity of a certain type of parent is to seize upon some unguarded comment made by one medical man, and repeat it with exaggeration to another. It behoves both sides to avoid playing into the hands of mischief makers, the one by exercising great discretion in his remarks, the other by remembering how the phrases that reach him are likely to have been distorted.

[1] THE LANCET, August 23rd, p. 425.

SCLEROSING SOLUTIONS IN THE NOSE.

INJECTION of sclerosing solutions has been widely adopted in the treatment of varicose veins and piles, and the method has recently been advocated by Dr. L. H. Leroux,[1] of Paris, for cases of vascular hypertrophy of the inferior turbinals. The conditions here seem to be by no means the same, for in the treatment of the turbinals the needle is inserted until it is in contact with the bone, and the injection is made into connective tissue and not into the vessel. Leroux employs a 5 per cent. solution of the double hydrochloride of quinine and urea, giving two to four injections of 2–3 c.cm., according to the size and tumefaction of the turbinal. He claims to obtain a great diminution in size after 8 to 10 days, without breach of surface, inflammatory reaction, or ulceration, and without risk of the sepsis or adhesions which may result from the galvanocautery. Some nasal obstruction follows from reactionary swelling, and he advises that a week's interval should elapse between treatment of the two nares.

SURGICAL FEES.

IN his presidential address to the sixtieth annual meeting of the Colorado State Medical Society, held at Pueblo, last month, Dr. W. A. Kickland, of Fort Collins, presented a forceful and independent point of view on the disparity between medical and surgical fees. The high cost of surgery, he remarked, is not new. A surgeon in the thirteenth century was able to charge the equivalent of $200 for an operation and to claim in addition an annuity of $25 a year. But in modern times the difference in the fee paid for the difficult and skilled work of diagnosis and for surgery, which may involve no more skill nor the use of more costly apparatus, has led to abuses. Fee-splitting, he thought, was originally an attempt to correct the injustice and for a while it worked well. The patient was not submitted to operation without consultation; surgery was confined to the trained specialist and medical relations were happy. However, abuses crept in. The operator might be selected less by his skill than by the share of his fee which he would offer. The medical man was tempted to urge operations for the sake of the profit which might come to him. When, therefore, the American College of Surgeons was founded in 1913, stringent regulations against fee-splitting were made, and in the State of Colorado fee-splitting is now punishable by a heavy fine, or a gaol sentence, or both. Dr. Kickland is not altogether satisfied with the consequences of this severe repression, which still leaves untouched the injustice of unequal fees. The general practitioner in Colorado has now resorted to the practice of surgery himself. In one city, Dr. Kickland said, where there were only three men doing major surgery 12 years ago, there are now 28 surgeons of whom 19 engage in major surgery. The patient is liable to be deprived of the advantage of consultation and of the operative skill which comes with adequate surgical training and a practice

[1] Presse Méd., August 2nd, p. 1046.

limited to surgery, while the temptation to urge surgical interference with undue frequency has not been removed. At the same time the man who devotes years of his life to preparation for special practice is handicapped by unfair competition. Dr. Kickland's solution of a difficult problem is for the State to sanction special surgical practice only on production of a diploma granted after post-graduate study.

THE MEDICAL DEFENCE UNION.

Sir Herbert Waterhouse, happily recovered from his accident in the early summer, presided on Oct. 2nd at the annual general meeting of the Medical Defence Union, when a year of continued success and prosperity was reported. A membership of more than 16,000 testifies to the confidence which is placed in the Union by the rank and file of the medical profession, and the increasing membership has made it possible for the Union to improve its financial position. For some years the Union has had an agreement with the Yorkshire Insurance Company, whereby the first charge for indemnity against damages was borne by the funds of the Union up to an amount equal to 50 per cent. of the subscription income of the previous year. In consequence of the steady growth of the reserve fund it has now become possible to undertake a liability up to the entire amount of the subscription income of the preceding year, thus enabling the Union to insure against any claims in excess of that amount for a considerably smaller premium than has been paid hitherto.

Some of the cases quoted in the report give an indication of the charges which the conscientious practitioner may be called upon to face. One member had occasion to give an emergency certificate for removal to a mental hospital of a patient whose delusions made him dangerous to himself and others; he was detained for a week, and after his release the practitioner received a claim from a solicitor for the charges made by the guardians for the maintenance of the patient. The solicitor was advised that the certificate was given in good faith and with reasonable care, and the case was abandoned. Another member found it necessary to report a district nurse to the secretary of the local nursing association for criticising his methods, disobeying his instructions, and neglecting the patient, with the result that she was requested to resign. Two days later he received a solicitor's letter claiming damages for alleged slander. The solicitor was informed that the case would be defended by the Union, and nothing further was heard. Year after year the President finds it needful to emphasise the importance of an X ray examination in all cases of injury to a bone or a joint. In cases of refusal by the patient he advises all practitioners to preserve some definite record of the fact. Claims of alleged neglect are made repeatedly on the grounds that radiography was not advised, and that subsequent examination revealed a fracture. During the past year one member asked whether it was advisable to render his professional account to a patient with an injury of the ankle which he had failed to recognise as a fracture. An X ray taken a week later on her return home showed an incomplete fracture of the external malleolus with displacement. The member was advised to send in his account in the usual way, but the case serves to emphasise the President's warning.

Incorrect treatment is often alleged as an excuse for refusing payment of fees; a patient who had been treated by a member for a resistant patch of ringworm for about one month, afterwards consulted another doctor; when he received the account for the earlier attention he refused payment on the grounds that treatment had been faulty. On the advice of the Union the member threatened legal proceedings, with the result that the account was paid in full. Opinions sometimes differ on the question of what constitutes adequate care of a case, but it is remarkable to find that the charge of insufficient attention was made against one member who, for services including an antenatal visit, attendance at the confinement, eight subsequent visits, and a fee for an anæsthetist, sent in an account of five guineas. Upon the issue of a default summons on the advice of the Union the account was paid in full. Both the gratitude and the ingratitude of patients are proverbial and embarrassing, but the Medical Defence Union can shield the conscientious practitioner from at least one of them.

INTERNATIONAL CONGRESS OF HISTORY OF MEDICINE.

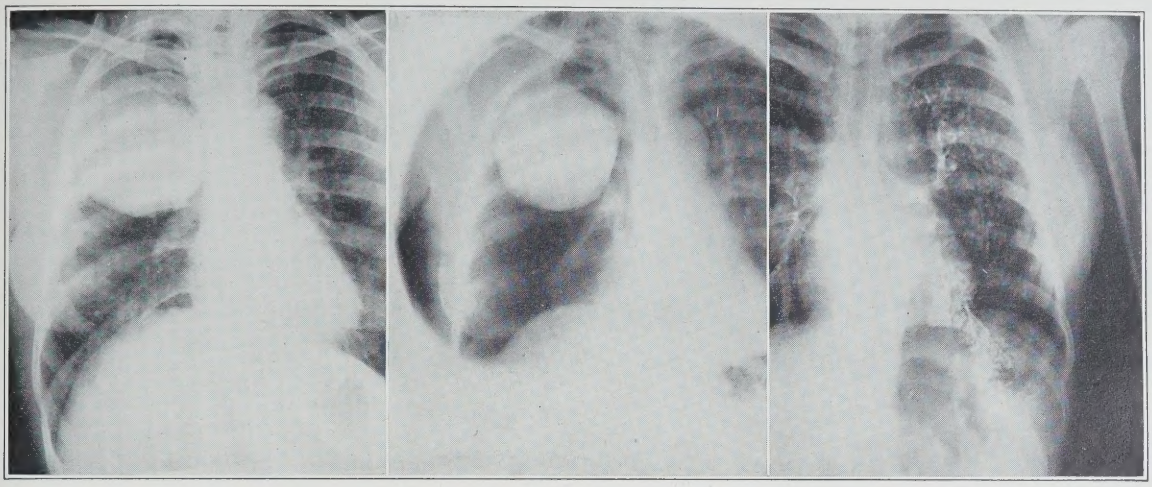
THIS congress was held at Rome from Sept. 22nd to 27th, under the Presidency of Sign. Mussolini and a committee of honour, including such well-known names as Profs. R. Alessandri, V. Ascoli, and R. Bastianelli, while the executive committee consisted of Prof. P. Capparoni, A. Castiglioni, A. Casarini, and D. B. Roncali. The work of the congress was divided among three sections: (1) Leprosy and the compulsory study of the history of medicine in the universities. (2) The cultural relations between Italy and other European nationalities in connexion with medicine and the natural sciences during the scientific renaissance of the sixteenth and seventeenth centuries. (3) Miscellaneous communications, such as papers on plague, the handwriting of Leonardo da Vinci, the influence of folklore on the evolution of medicine, on madder and spongia somnifera. The congress was granted a special audience by the Pope, who addressed the members on the importance and value of studying the history of medicine, and also had the advantage of inspecting the rare medical works in the Casanate library. Among those present at the congress were Dr. J. D. Rolleston, British delegate representing the Royal College of Physicians and the Royal Society of Medicine, Prof. G. E. Gask, the University of London and the Royal College of Surgeons, Dr. Vincent Dickinson, the Society of Apothecaries, and Dr. R. Whitehead the University of Manchester. The congress concluded by a banquet at the Hotel de Russie, at which about 140 guests were present.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.—A course of lectures, entitled Some Newer Therapeutic Agents, their pharmacological identification and tests, with some account of their uses in medicine, will be given by Dr. J. H. Burn, director of the pharmacological laboratories of this society, in the Lecture Theatre, 17, Bloomsbury-square, on Monday, Oct. 13th, and succeeding Mondays, at 5.30 P.M. Admission to the first lecture will be without ticket, but to subsequent lectures by ticket only.

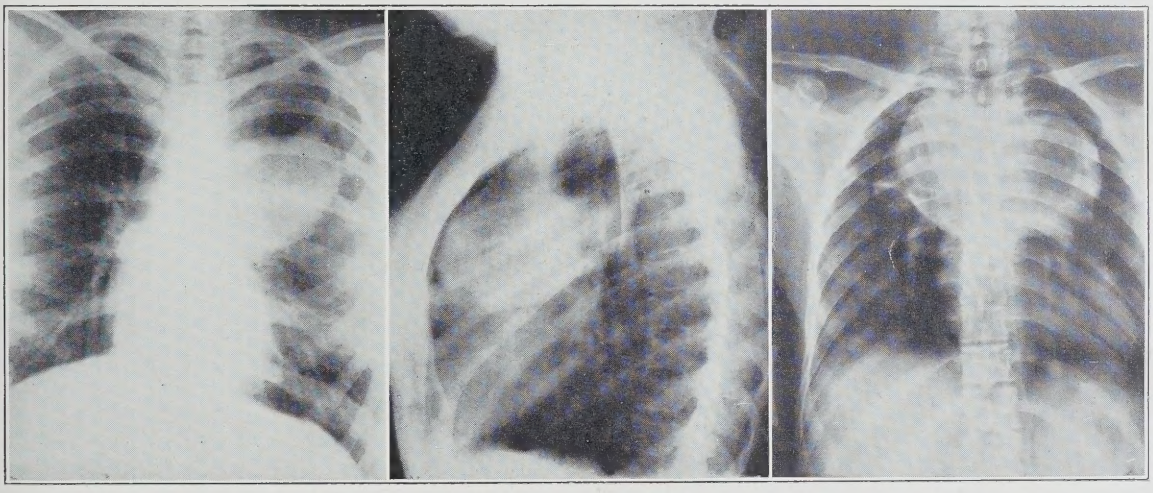
A COURSE ON VENEREAL DISEASES.—A course of post-graduate lectures and demonstrations on Modern Methods in the Diagnosis and Treatment of Venereal Diseases is being given at the V.D. Treatment Centre, Municipal Clinic, 155, Regent-road, Salford, by Lieut.-Colonel E. Tytler Burke, director of the clinic, on Thursday, Oct. 9th, at 7 P.M., and at the same time each Thursday for 15 weeks. In addition, a course of four lectures and demonstrations on Congenital Syphilis is being given at the clinic on Oct. 9th, 16th, 23rd, and 30th.

DRS BURRELL AND MELVILLE: INTERPRETATION OF RADIOGRAMS OF THE CHEST.

XVII. XVIII. XIX.



XX. XXI. XXII.



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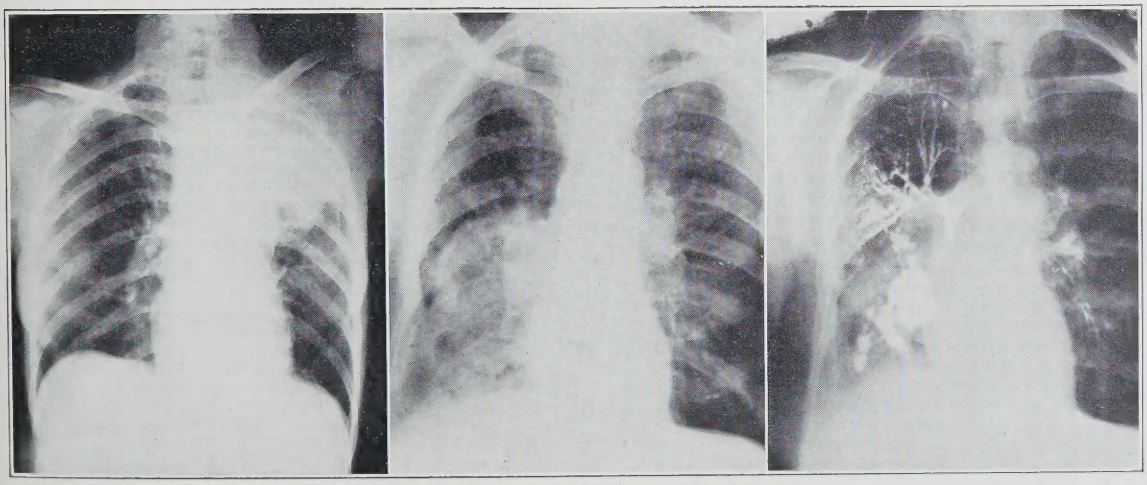
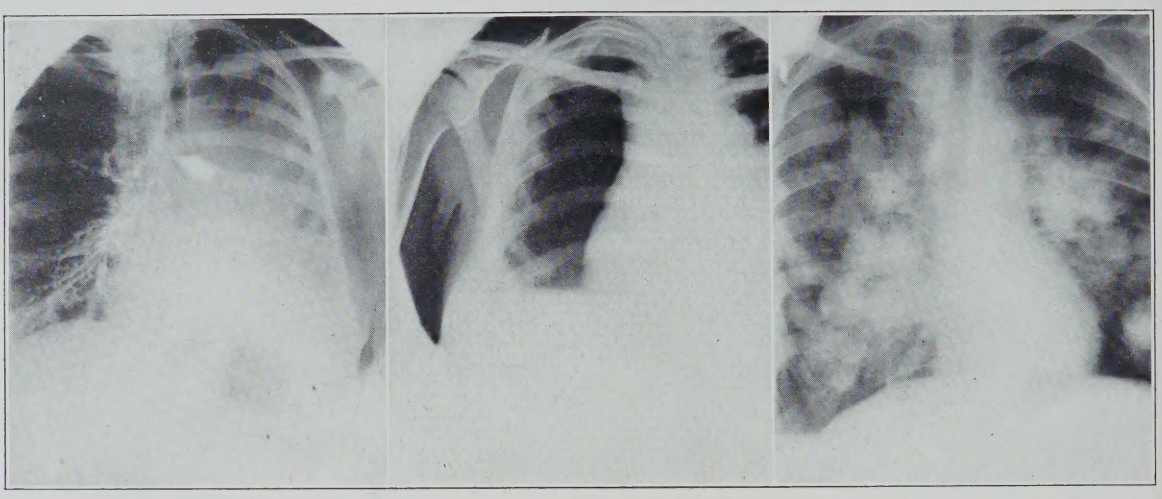


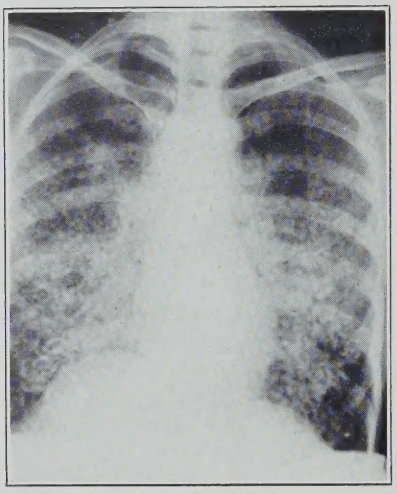
DRS. BURRELL AND MELVILLE: INTERPRETATION OF RADIOGRAMS OF THE CHEST.

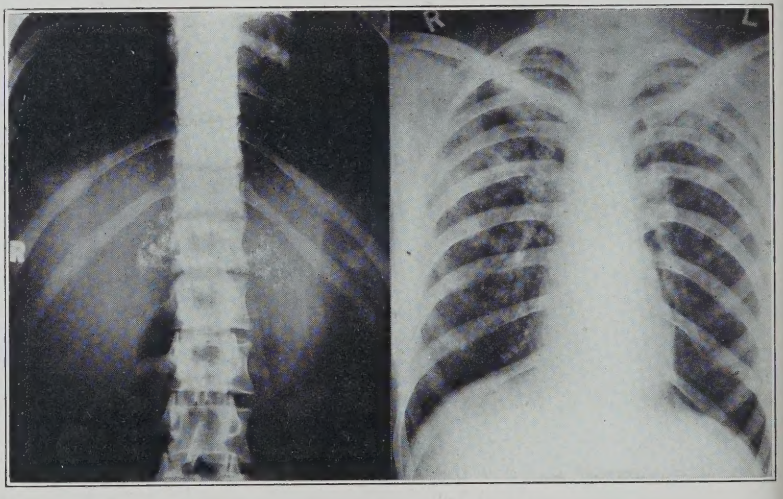
XXVI. XXVII. XXVIII.



DR. THEODORE THOMPSON: RADIOGRAPHY IN ADDISON'S DISEASE.

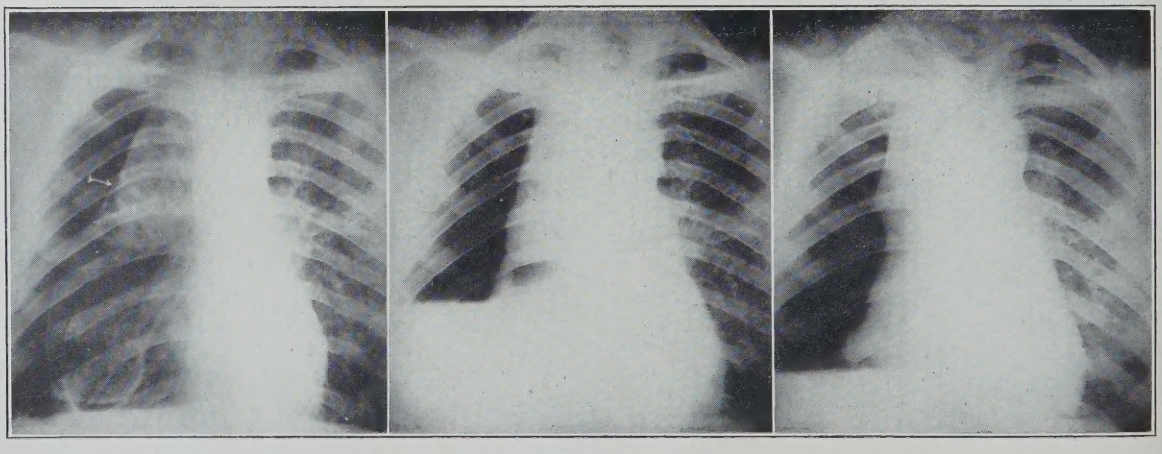
XXIX. I. III.





DR. H. E. SYMES-THOMPSON: SPONTANEOUS PNEUMOTHORAX.

I. II. III.



CLINICAL INTERPRETATION OF AIDS TO DIAGNOSIS

A Series of Special Articles, contributed by invitation.

LXXXV.

RADIOGRAMS OF THE CHEST.

(WITH ILLUSTRATIVE PLATES.)

PART II.*

NEW GROWTHS OF THE LUNG.

IN the preradiological days medical literature contained few references to new growths of the lung and these only from the standpoint of morbid anatomy. Modern advances in surgery have now made possible the removal of some at least of the intrathoracic tumours, and the importance of early diagnosis is therefore paramount. The presence of a tumour may be suspected on clinical grounds, but the diagnosis is rarely sufficiently definite to justify an operation until the tumour has reached a large size. By means of X ray examination, however, it is mostly possible to detect a tumour at an early stage, and also to localise its position in the chest.

Only in the strict pathological sense is it possible to divide intrathoracic growths into those that are benign and those that are malignant. All forms of intrathoracic growth, whether of lung, mediastinum, or even extrapulmonary, will deprive the patient of life in the long run by a process of compression. Tumours of the lung may reach a large size before any definite symptoms develop, whereas those in the mediastinum usually give rise to pressure symptoms when still comparatively small, owing to their confined space and the important structures in the mediastinum.

Benign Neoplasms.

Every variety of growth can be found within the thorax. The most common is the fibroma or a combination of fibroma with lipoma. Most if not all of the benign growths are extrapulmonary, in the sense that they do not originate from the lung tissue itself, but merely push the lung in front of themselves in the process of growth. The fibromata usually arise from the periosteum of a rib or from the endothoracic fascia. The X ray appearances are characteristic and consist of a well-defined rounded opacity, usually single, which can be shown to arise usually from the posterior part of the thoracic wall. The diagnosis can readily be made by the simple expedient of collapsing the lung, when the tumour will be shown to be extrapulmonary and not adherent to the lung itself (figs. XVII. and XVIII.). A fibroma has been known to arise in a bronchial tube. Hæmoptysis is the usual symptom. The patient, whose chest is illustrated in fig. XIX., had been sent to a sanatorium as tuberculous, owing to the hæmoptysis and the physical signs which followed collapse of the lung supplied by the blocked bronchus. Injection of lipiodol revealed the nature of the obstruction, and the small tumour was later removed with good recovery.

DERMOID CYST.

The teratomata or inclusion cysts have their origin either from the remains of the thymus gland or from the third or fourth branchial clefts. They are, therefore, always anterior in position, differing in this respect from the fibromata. They also are extrapulmonary, but, being more irritant in their nature, are apt to cause adhesions, and are not readily separated from the lung and pleura. They may contain any of the tissues—hair, bone, teeth, sebaceous material, &c. Another point of difference between them and the fibromata is that the former are much more irregular in shape though of equal density. Careful examination will sometimes reveal the presence of teeth or fragments of bone in the radiogram, while, clinically, hairs may be coughed up. The diagnosis of such tumours can be confirmed by radiogram taken in the lateral plane, when their anterior position will be seen (figs. XX. and XXI.).

CYSTS OF THE LUNG.

Simple cysts occur, though a differential diagnosis cannot be made radiologically from such cysts as the

*Part I., Normal and Infective Conditions, appeared in THE LANCET last week. Part III., on Tumours of the Mediastinum, will appear next week.

LEGENDS TO ILLUSTRATIONS APPEARING ON SPECIAL PLATES.

DRS. BURRELL AND MELVILLE: INTERPRETATION OF RADIOGRAMS OF THE CHEST.

XVII. Fibroma.
XVIII. Same case as fig. XVII., showing the extrapulmonary situation of the growth by means of collapsing the lung.
XIX. Small fibroma blocking the main left descending bronchus with injection of lipiodol to show bronchial stenosis.
XX. Dermoid cyst.
XXI. Same case in lateral plane to show the anterior position of the tumour.
XXII. Hydatid cyst.
XXIII. Primary bronchial carcinoma of upper lobe.
XXIV. Primary bronchial carcinoma of lower lobe, simulating lung abscess.
XXV. Same case as fig. XXIV. after injection with lipiodol.
XXVI. Primary basal carcinoma of bronchus, showing bronchial stenosis after intratracheal injection of lipiodol.
XXVII. Endothelioma of pleura. To show the opacities on the pleural surface after collapse of the lung.
XXVIII. Metastatic deposits in lung (sarcoma in bone), showing "puff-ball" opacities.
XXIX. Carcinomatosis, showing the characteristic stippling, coarser than that of miliary tuberculosis.

DR. THEODORE THOMPSON: RADIOGRAPHY IN ADDISON'S DISEASE.

I. Radiogram showing partially calcified bodies corresponding in shape and position to the suprarenal glands on each side of first lumbar vertebra.
III. Radiogram of chest showing fairly extensive tuberculous infiltration of both lungs, the changes being more marked on the right side.

DR. H. E. SYMES-THOMPSON: SPONTANEOUS PNEUMOTHORAX.

I. Artificial pneumothorax (August 28th). Moderate collapse of the right lung. The arrow points to the superficial cavity, where it is presumed that the subsequent lung rupture occurred.
II. Artificial pneumothorax complicated by spontaneous pneumothorax (Oct. 23rd). Almost complete collapse of the lung. Free fluid reached the level of the fourth interspace.
III. The same (Nov. 8th). Right lung completely collapsed. The level of the fluid is lower, owing to air replacement having been performed.

hydatid or echinococcal cyst. Hydatid cysts may be found in any organ, but are most commonly seen in the lung. They show as well-defined rounded or oval opacities with a homogeneous centre (fig. XXIII.). They are commonly situated in the right lower lobe. They may be single or multiple, and show up clearly in contrast with the translucent surrounding lung tissue. They set up much local irritation, and the lung tissue in their neighbourhood is liable to become congested and fibrosed. Not infrequently the diagnosis is made clinically by the expectoration of hooklets or other evidence.

Malignant Neoplasms of the Lung.

Of the malignant neoplasms, carcinoma would appear to be the most common. In spite of contrary evidence given by some writers, in our view there is no doubt that primary carcinoma of the lung is definitely on the increase. In the *Fortschritte f. Radiol.* for 1924 the incidence of primary carcinoma arising from the bronchus of the lung is given as from 4 to 6·3 per cent. of all carcinomas of the body—an amazingly high figure. On the other hand, primary sarcoma of the lung is of much less frequent occurrence than was formerly thought to be the case. Indeed, there is the gravest doubt as to whether a primary sarcoma ever does arise from the lung, or whether many of the cases of so-called sarcoma may not have been carcinoma of the small-celled variety, or possibly large metastases from an undiscovered small sarcoma elsewhere in the body —e.g., in the prostate.

PRIMARY BRONCHIAL CARCINOMA.

This arises from the mucosa of a large bronchus, and rapidly causes stenosis of the bronchus and consequently collapse and air absorption of the lung supplied by it. For convenience it is well to divide bronchial carcinoma as met with clinically into (*a*) upper lobe carcinoma; (*b*) hilar carcinoma; (*c*) lower lobe carcinoma.

Upper Lobe Carcinoma arises, as has been stated, from a large bronchus close to the bifurcation of the trachea. As soon as it has blocked the bronchus the part of the lung supplied by it collapses, so that what the radiogram shows is not growth, but the upper lobe of the lung, opaque and airless, the line of the opacity being sharply demarcated by the interlobar septum (fig. XXIII.).

Hilar Carcinoma.—Some of the carcinomata originating from the region of the hilum, in addition to causing stenosis of the bronchus, appear to invade the bronchial wall, traverse it and spread to the lung tissue. The growth is most irregular in form, and there are heavy linear processes seen extending into the lung tissue. There is much general enlargement of the bronchial glands. At times they may be mistaken for interlobar empyema and nothing but the closest coöperation between clinician and radiologist can avert this error.

Lower Lobe Carcinoma.—This type of primary bronchial carcinoma is difficult to diagnose. The lower lobe is irregularly opaque, and there is almost universally early pleural involvement with effusion, which also tends to obscure the condition. To these difficulties we have to add the early occurrence of degenerative processes (central necrosis, &c.), so that the distinction between carcinoma, abscess of lung, or even bronchiectasis becomes increasingly difficult. Nor does the clinical evidence assist greatly. At times characteristic cells may be found in the pleural effusion. As a general rule, the clinical evidence, as in all forms of lung neoplasm, are cough of a peculiarly irritative and non-productive character, occasional hæmoptysis, increasing breathlessness, and loss of weight. It is a curious fact, and one well recognised by clinicians, that after an early more or less acute onset, with some evidence of bronchitis with fever, the symptoms subside and the patient for a time appears to be better; at times this has given rise to the belief that there has been an error in diagnosis (figs. XXIV. and XXV.). Some German writers have described a form of bronchial carcinoma which they have called the cavernous carcinoma. It is probable that these cases are those in which necrosis and central softening have taken place and are not a separate kind of carcinoma.

DIAGNOSIS.

In diagnosis of the various types of carcinoma, there are two modern aids:—

1. *The Production of Artificial Pneumothorax.*—This is possibly of greater value in extrapulmonary growths, and at times the distinction between the collapsed lung and the denser opaque growth is very remarkable.

2. *Intratracheal Injection of Lipiodol.*—In carcinoma the stenosed bronchus is seen to fill irregularly or even in a "rat-tail" manner, and when this is noticed the diagnosis is almost conclusive. If the bronchus is completely stenosed the lipiodol is seen to terminate abruptly (fig. XXVI.); if only partly stenosed, an irregular filling with lipiodol will be noted.

ENDOTHELIOMA OF PLEURA.

Primary endothelioma is rare, but when it does occur, a characteristic blood-stained effusion, in which may be found typical cells, is invariably present. If the lung be collapsed, irregular opacities can be seen on the pleural surface or viewed directly with the thoracoscope (fig. XXVII.).

METASTATIC TUMOURS OF LUNG.

There is no definite radiological difference between the appearance of metastases of sarcoma and carcinoma. As a general rule those of sarcoma grow with amazing rapidity and cause a rapid fatal termination, whereas the rate of growth in carcinoma is slower and less rapidly fatal.

In both, the lungs appear to be studded with the characteristic "ping-pong" or "puff-ball," somewhat woolly opacities, varying in size from a bean to a small tennis ball (fig. XXVIII.).

MILIARY CARCINOMA OR CARCINOMATOSIS.

In this condition the lungs are seen to be completely studded with stippled shadows, usually somewhat coarser and denser than is the case in miliary tuberculosis. The spread is either by the blood stream or through the lymph stream, and there is frequently involvement of pleura as well as lung (fig. XXIX.).

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CENTENARY OF CUMBERLAND INFIRMARY.—This Carlisle hospital last week celebrated its centenary. It is proposed to commemorate it by raising £10,000 for the building, equipment, and endowment of a new operating theatre.

SPECIAL ARTICLES

AN OUTBREAK OF SCARLET FEVER AT A PREPARATORY SCHOOL.

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AND

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THIS outbreak, which ran on through three consecutive terms, deserves record not only on account of the high attack-rate (some 60 per cent. of the boys), and of the long infectivity of the convalescents shown by the occurrence of an unusual proportion of secondary or return cases, but chiefly because in all cases in which the type of infecting hæmolytic streptococcus was determined (14 out of 30), as well as in two so-called pure-plate carriers who were suspected of having been secondary sources of infection, one serological type was found—viz., scarlatinal streptococcus type 2.

Our investigation did not begin until the second term of the epidemic. The school consisted of about 50 boys (the number varying slightly in each term), all boarders between 8 and 14 years of age, housed in a modern school-house near the sea. No cases of scarlet fever had occurred amongst the pupils at the school for more than 40 years. Two boys were, however, immune by attacks previous to entry.

CHRISTMAS TERM, 1929.

The outbreak began on Nov. 12th, 1929, with seven cases in the Christmas term, the last on Nov. 21st. Each patient without exception was promptly removed to hospital immediately the disease was diagnosed, usually within a very few hours after the onset, and remained there at least six weeks. No bacteriological investigations were made during this term, but on other evidence the probable source of infection seemed to be a boy (A), who had developed scarlet fever on August 29th, 1929, during the summer holidays. A returned to school on Oct. 20th (seven and a half weeks after the onset of his attack). On Oct. 26th he had a chill and high temperature, and was confined to bed (isolated in the sick bay) for several days. The first boy to develop scarlet fever in the school (Case 1) was in A's form, and fell sick on Nov. 12th, some days after A's release from the sick bay, and 75 days after A's onset. A shared a dormitory with six other boys. One was taken home immediately it was known that Case 1 had scarlet fever and this boy escaped infection. Of the other five boys in A's dormitory three sickened, Case 2 on Nov. 13th, Case 5 on the 17th, and Case 6, a boy who slept between A and 5, on the 19th. There is, therefore, considerable evidence for the view that A was the source of infection. Moreover, it was found later, 155 days after his onset, that A was carrying type 2 scarlatinal streptococcus, which subsequently proved to be the cause of the outbreak.

LENT TERM, 1930.

After the occurrence of Case 7 on Nov. 21st, nearly four weeks of the Christmas term passed without further cases, and as the boys were then dispersed for the Christmas holidays of more than a month it was hoped that the outbreak was at an end. This hope was not realised, for, some ten days after the beginning of the Lent term, four cases of scarlet fever occurred in rapid succession. At this point our advice was sought as to the possibility of discovering the source of the recurrent infection. To do this it was necessary in the first place to determine the type of hæmolytic streptococcus infecting the four patients, and secondly to search for any carrier or carriers of that type, who might have reintroduced the infection.

First swabbing.—Accordingly on Jan. 31st swabs were taken from the following boys:—

(1) The four patients (Cases 8, 9, 10, 11) just removed to hospital; (2) from the six[1] boys (Cases 2 to 7) who had returned to school after having had the disease in the previous term; (3) from A the suspected original source of infection in the previous term; (4) from eight other boys, contacts or suspects, including one who had had scarlet fever more than four years previously.

The results were as follows:—

(1) All four patients gave copious growths of scarlatinal streptococcus type 2; (2) two of the six boys who had the disease in the previous term (Cases 3 and 6) were carrying type 2; (3) A was also carrying type 2, but so sparsely that the plates made direct from two swabs were both negative, the streptococcus being discovered only through the inoculation of a mouse with a broth culture from the swab; (4) of the eight other boys, only the boy who had had scarlet fever four years before was carrying hæmolytic streptococci and these were of a type which could not be identified with type 2 or with any of the chief scarlatinal types.

The carriers of type 2 discovered were obviously of first importance as possible sources of the reintroduced infection, and of these Cases 3 seemed the most likely. His swab had given a pure and profuse growth of hæmolytic streptococci, and his tonsils were enlarged and somewhat unhealthy in appearance. He had been sleeping in the next bed to Case 8 (the first case of the Lent term) since the beginning of term—ten days—and was in the same form. Moreover, he proved a persistent carrier, giving pure cultures, until his tonsils were removed, when he almost immediately became free. Case 6, whose swab had yielded a less profuse growth of hæmolytic streptococci, had had scarlatinal rheumatism complicating his attack and had returned to school late on Jan. 26th. His carrier condition cleared rapidly, and he was released from isolation on Feb. 21st. Both 3 and 6 were isolated on the day after the swabs were taken on account of the appearance of the plates without waiting for the completion of the agglutination tests. We have already stated that A gave a negative plate from each of two swabs and that he was carrying type 2 was only found after resort to mouse passage. In view of this, and as five months had elapsed he was not isolated. Despite the isolation of the two profuse carriers (3 and 6), cases of scarlet fever continued to occur at short intervals through the term.

Second swabbing.—On March 14th all the boys remaining in school, and certain of the staff, were swabbed.

[1] Case 1 had not returned to school, having infected his sister at home on his discharge from hospital where he had been detained six weeks.

Out of 23 boys 6 (26 per cent. [2]) were carrying hæmolytic streptococci, but only two of these were identified with scarlatinal type 2. In the case of one of these boys, B, carrying type 2, the plate showed a pure and profuse culture. B had had a slight sore-throat on Feb. 22nd, and as circumstances made it appear probable that since then he had been the source of infection in two or three cases, it was thought that he had probably had an attack of "scarlatina sine eruptione" on that date.

The other boy carrying type 2 had had scarlatina in the Christmas term (onset 121 days before the date of swabbing); his direct plate was negative, and that he was still a carrier was only discovered by the mouse test. In view of these facts he was not isolated.

The history of the four boys, referred to above, who at this swabbing on March 14th were carrying hæmolytic streptococci *not* identified with any of the four scarlatinal types, is of some interest. One was A, who had been attacked by scarlet fever 197 days before, and had carried the type 2 strain for at least 155 days. A second boy (Case 29) developed scarlet fever four days later, on March 18th, and when swabbed on March 24th, yielded a profuse culture of type 2. A third boy (Case 33) developed scarlet fever 76 days later, after giving a negative swab eight days before onset.

In all 22 cases occurred in the Lent term, and in view of the persistent nature of the outbreak, the school authorities antedated the end of the term to March 18th.

SUMMER TERM, 1930.

The school reassembled on April 25th for the summer term. Certain patients of the previous term had not yet returned, but there were three new boys. Four cases occurred in this term, the first (the thirtieth of the whole series) on May 11th, the last on May 29th, making the thirty-third case of the series. The first patient was a new boy (Case 30) who came to school on May 6th, just released from quarantine after whooping-cough. He happened to arrive at school at the time at which Case 24 returned, and Case 24 assisted him to unpack. The suspicion that he might have contracted scarlatina from 24 was not supported bacteriologically, since the latter, when swabbed on the 21st, was found not to be a carrier. It is more likely that the infection reintroduced this summer term was derived from a member of the domestic staff, who was in close contact with the new boys. This lady (C) had had scarlet fever in childhood; her tonsils were large and somewhat unhealthy, and she had an old history of quinsy. In the Lent term she had a severe attack of tonsillitis, and was in isolation from Feb. 25th until March 13th, when she went home [3] and did not return to the school until the beginning of the summer term. Her medical adviser thought the condition might be diphtheria, and swabs from her throat taken about March 1st were examined, though not by us, and pronounced negative, but probably they were only examined for diphtheria organisms. Tested by us on May 21st this lady's swab gave a copious growth of scarlatinal streptococcus type 2, and she has continued to "carry" for several months.

There is thus a strong probability that her attack of tonsillitis during the Lent term was the result of infection with the prevalent type 2 streptococcus, which persisted in her throat, and was transmitted to the above-mentioned four patients in the summer term. These patients were all small boys with whom her duties brought her into close contact. She had come first to the school at the beginning of the Christmas term, and so might conceivably have been the original source of infection if she was a carrier then. The earlier cases, however, occurred in somewhat older boys with whom she was but little in contact. Moreover, the evidence that the boy A was the original source seems overwhelming.

Third swabbing.—This was carried out on May 21st to ascertain the proportion of carriers. All the boys remaining in school (43), all the teaching staff (6), and all the domestic staff (11) were swabbed.

Of the 42 boys examined, 23 had had the disease. Four boys, all old patients (one 112 days after onset) still carried streptococcus type 2, but all sparsely; seven others (among whom were five old patients and one new boy) carried hæmolytic streptococci of strains other than type 2, none being recognised scarlet fever strains; one of the above five was A (now 265 days after the onset of his scarlatinal attack) and another was Case 1 (now 190 days after his onset). Thus, the carrier-rate of hæmolytic streptococci of all strains was still 26 per cent. Of the 31 boys who gave swabs without hæmolytic streptococci on this date (21/5/30) 14 were old patients and one (B) had probably had "scarlatina sine eruptione." Of the 16 other "negatives" two subsequently developed scarlet fever; the first (Case 32) who had been negative when swabbed on two previous occasions in January and March was attacked four days later on May 25th; the second (Case 33), who was not swabbed in January but in March was found to be carrying a fair number of heterologous H. streptococci, developed the disease eight days later on May 29th.

Of the *teaching staff* two out of six carried hæmolytic streptococci, but in both cases the strains were heterologous. Of the domestic staff of 11, 5 carried hæmolytic streptococci, two of the strains being type 2. One of these staff carriers was the lady C, to whom reference has already been made, as the probable source of the summer term infection. She was immediately isolated. The swab from the second (a parlourmaid who waited on the boys at meals) gave a negative plate, and only by mouse test was she shown to be a carrier; she was not isolated.[4]

The recurrence of the scarlatinal outbreak during the Christmas and Lent terms has been attributed respectively to Case A and Case 3 (and, perhaps, to Case 6). In addition, the following return cases are known to have occurred elsewhere than at the school. Case 1 infected his sister in the Christmas holidays; Case 12 infected two maids at home; Case 19 an aunt, whilst Case 28 gave rise to two return cases in different places (one 64 days, the other 73 days after his own onset).

The clinical type of the boys' cases was one of medium severity. Two patients had endocarditis, and there were many cases of adenitis. Rashes were profuse.

Discussion.

The distance and other circumstances prevented the completion of the bacteriological picture, but even in its imperfect form it is instructive. In every case save one (14 out of 15) where a swab was obtained from a patient early in his attack, hæmolytic streptococci, identified serologically as scarlatinal streptococcus type 2, was obtained in nearly pure culture. Bacteriological investigation of suspected carriers seemed in each term to explain how and by whom the infection was carried on from the previous term. Several different ways in which scarlet fever is spread and carried on from outbreak

[2] This high carrier-rate of hæmolytic streptococci in a community where "dropping" cases are occurring has been observed in scarlet fever in a boarding school on a previous occasion (Nasopharyngeal Epidemics in Public Schools, Glover, J. A., Brit. Med. Jour., 1928, ii., 91; Proc. Roy. Soc. Med., 1928, xxi., 1605), and it is possible there is a similarity in such cases with the phenomenon of the danger line seen in cerebro-spinal fever—i.e., that, when the carrier-rate of the meningococcus—i.e., the carrier epidemic—in a community rises to a certain height (20 to 30 per cent.) clinical cases of meningococcal meningitis will probably occur. (Glover, Medical Research Council, Special Report No. 50, p. 140.)

[3] She thus escaped our swabbing of March 14th.

[4] The pneumococci grown from these swabs were also isolated and typed. 46 of the 60 swabs (77 per cent.) were carrying pneumococcus and the swabs from the boys showed some evidence of cross-infection. Eight boys were carrying the same strain of type 6, whilst five boys and one of the domestic staff were carrying type 23.

to outbreak were all illustrated. Infection from a still infectious convalescent, the typical "return" case, is well shown in the cases of A and 3, infection from a patient convalescent of "scarlatina sine eruptione" is illustrated by B, whilst C affords an example of infection by a chronic carrier, who, although immune to scarlet fever from previous attack in early youth, yet is probably reinfected with scarlatinal streptococcus from her attendance on patients just after their onset so that she suffers from tonsillitis severe enough to be thought diphtheritic, and two months later is found to be a carrier of pure and profuse type. The influence of nasopharyngeal abnormality in prolonging the carrier condition and infectivity is shown by Case 3 and by C. The well-recognised influence which a subsequent minor infection may have in making a patient infectious again after a period of non-infectivity is seen in the case of A and in Case 28.

Prolonged infectivity is well known, and many instances are given in the literature,[5] but that such a high proportion (8 return cases from 34 cases = 23 per cent.) of known return cases should arise in good hygienic conditions is strong evidence of the prolonged infectivity of this particular strain. The hospital proportion of return cases is usually stated as 4 per cent. and the very efficient isolation hospital, to which these patients had been removed and in which a six weeks' detention is the regular rule, had been almost completely free from return cases for years.

That many convalescents continue to carry hæmolytic streptococci of scarlet fever type without being infective has been observed by Griffith and Gunn,[6] who showed that of 100 patients swabbed, on the day prior to their discharge from hospital after scarlet fever, 50 carried hæmolytic streptococci, yet none gave rise to "return" cases. The question of attempting to prevent the spread of the disease by immunity methods was discussed at various periods in the outbreak, particularly after the occurrence of the first four cases in the Lent term. A method sometimes successfully used in outbreaks in children's hospitals is to produce passive immunity (lasting about a fortnight) by the injection of an anti-scarlet fever serum. The immunity produced by this method is, however, too evanescent for use in a boarding school, and has the further disadvantage that it involves the risk of sensitising the boys to serum, if serum treatment be required later. Active immunity by the Dick method takes too long and is too uncertain. The small experience of this method in English schools has not been encouraging, though for the use of a hospital staff it may be very valuable. For these reasons immunity methods of prophylaxis were not advised.

That previous "carrying" of a heterologous strain of hæmolytic streptococcus does not necessarily confer immunity against an epidemic strain like type 2 seems to follow from Case 29 (found carrying heterologous strains four days before onset) and Case 33 (76 days before onset).

Various prophylactic precautions were adopted; for example, in the summer term all boys who had had the disease ate at separate tables at meals, worked in separate forms, and slept in separate dormitories from those boys who had not had it. Temperatures were taken daily, teeth were cleaned, nasal douching and gargling done three times a day under supervision. The nasal douching and gargling were not advised by us, and that such precautions are of little avail is shown by the fact that on May 21st, after nearly four weeks of gargling and douching, 11 out of 43 boys were still carrying hæmolytic streptococcus.

It must indeed be confessed that the results of all the precautions taken, including immediate isolation and hospitalisation of patients, were disappointing.

[5] See particularly Dr. Miles Arnold, p. 252, Reports on Public Health and Medical Subjects. Report 35, Ministry of Health.
[6] W. Gunn and F. Griffith: Jour. of Hyg., 1928, xxviii., 50.

POST-GRADUATE COURSES AT THE TEACHING HOSPITALS.

SPEAKING at the Post-graduate course at Charing Cross Hospital on Oct. 4th, Dr. F. H. YOUNG took as his subject the

Post-sanatorium Treatment of Tuberculosis.

He said that 85 per cent. of middle-class patients who enter sanatoriums came out with the disease quiescent, but that after 18 months more than half of them had suffered relapse. The reason for this was that practitioners were accustomed to think of pulmonary tuberculosis as an acute disease, instead of a chronic disease with acute exacerbations. Post-sanatorium treatment was the province of the family doctor, and on the return of the patient to his home the doctor should enter in his notes the state of the patient, the type of his disease, and the exact point reached in its course. Pulmonary tuberculosis was at first a local condition from which arose a general intoxication; in some cases the local process might progress without marked toxæmia, and in others the toxæmia might become severe without advance in the local lesion. Dr. Young divided cases into three types: first, a group in which the general resistance was high, and which included those patients who had coughed for 10 years before consulting a doctor and who had possibly had a cavity for 5 years; secondly, there was the type of case which often occurred in girls of 18 showing loss of weight and malaise with an occasional râle in the chest; X ray examination would show a deep-seated lesion which would progress like wildfire; thirdly, there was the type of patient with a large local lesion which settled on rest but flared up on exertion.

After deciding to which type the patient conformed the second action of the practitioner should be to find out what treatment the patient had received at the sanatorium, how he had responded to it, and, in particular, how much exercise he had been taking when dismissed. Next, the doctor must decide whether the environment in which the patient lived was responsible for the first breakdown, and if he were returning to the same environment attempts must be made to modify it. Then the psychological state of the patient must be studied; worry would often initiate a relapse, and must be avoided if possible. Finally, a careful physical examination must be made and the findings recorded on an accurate chart. This would be invaluable in the case of patients who were unable to afford frequent radiograms. Signs developing in a part of the thorax previously free were more important than the persistence of the signs found on return from the sanatorium. If there had been no X ray, one should be taken, and it must be remembered that under ordinary conditions the radiologist alone could not tell whether the disease was active or not.

On leaving the sanatorium in a state of quiescence, said Dr. Young, the patient would have no toxæmia, probably some cough and, possibly, tubercle bacilli

in the sputum; the weight might be normal or well above the normal, but during the first few months any excess would probably be lost. The treatment of most value in a case of pulmonary tuberculosis was rest, and if fresh air could only be gained at the expense of rest the patient had much better remain in his back room. His home should be in the country if possible, but London air was not bad for patients unless they had much fibrosis and bronchitis. He should sleep in a single bed, preferably with a room to himself, where he could retire for rest whenever he felt at all tired. The windows should, of course, be adequate and open. His children should be kept away from him as far as was reasonably possible. As to work, men had been killed in hundreds by being sent to poultry farms; any out-of-door job was strenuous, and a man who had been a clerk all his life had to exert himself to the uttermost to work 10 hours a day at a task which was entirely strange to him. Unless it was definitely harmful, a man should carry on with the work to which he was accustomed; a long train journey, possibly without a seat, was not balanced by extra fresh air if the man lived in the country at a distance from his work. Rest was the important factor, and certain of Dr. Young's own cases in the city spent an hour at lunch time lying down in one or other of the city churches. The patient should be encouraged to work for a salary on which he could live, and not to press for advancement. His week-ends could be used as times of extra rest when he could if necessary retire to bed for a day and a half. Regular supervision was essential, and a monthly assessment of his condition would not only make it possible to observe dangers early, but would calm the patient's anxiety about himself. Food should be good, served regularly, and suitable to the tastes of the patient. If the patient wished to marry and there was to be no increase in strain or financial stress in consequence, he would be well advised to get married; there should be no children for a year or two, and in the case of a woman not until 5 years after leaving a sanatorium. The monthly assessment should include a careful examination of the local lesion, and a series of comparative radiograms should be taken, if possible. A temperature chart was a useful indication of the degree of toxæmia if it could be kept without causing undue anxiety; a swing below the normal line in the mornings had more significance than a slight irregular evening rise. The pulse-rate was useful if charted accurately. In the general condition points to observe were slight tiredness where none was previously felt, and a fall in weight; it must not be forgotten, however, that there was an annual weight cycle which need cause no alarm. Shortness of breath might be due to fibrosis and bronchitis, or might be a toxic dyspnœa accompanied by a rise of temperature; it should be treated, in the second case, by an increase of rest. If rest was already extended to the maximum the help of a consultant should, for the first time, be sought, and further measures such as pneumothorax and phrenectomy might be considered. If all was going well the amount of exertion could be increased gradually. If the patient were symptomless for two years he might lead an ordinary life avoiding undue strain; if he were well for five years he might lead a normal life but should rest after any severe strain.

Sanatorium treatment, the speaker said, was valuable in helping the patient through the rising stages and through the grading of exertion; experience showed that difficulties arose in the course of tuberculosis, not through the absence of early diagnosis, but through failure to maintain the results achieved during the acute period.

Diagnosis of Renal Pain.

Speaking of renal pain, in a lecture given at the same course, Mr. C. JENNINGS MARSHALL said that the puzzling type of pain in the loin, of which so many patients complained, was often not cured by such measures as appendicectomy, fixation of the colon or kidney, gynæcological interference, or even diet and drugs. Causes could be grouped as renal and non-renal. Among the non-renal causes tabes dorsalis must of course be considered; tuberculosis of the spine was another possible cause, and in later life spondylitis deformans or scoliosis might give rise to pain. A rare cause was erosion of the vertebræ by an abdominal aneurysm, and it must be borne in mind that a lateral as well as an antero-posterior radiogram was essential in making the diagnosis. Secondary carcinoma of the spine with a symptomless primary growth in the stomach, breast, prostate, thyroid, and occasionally kidney, might be found. Fibrositis of the loin muscles was a very real cause of pain in this region, and nodules of fibrous tissue could be palpated if the muscles were relaxed; the condition responded well to massage and diathermy. Among bowel causes the appendix was the last offender to be considered. A common cause was a distended cæcum, recognisable on palpation; a sagging ascending colon might also be responsible, but fixation was not to be recommended in these cases as the end-results were not good; diagnosis could be made by radiography. Distended cæcum was often associated with a sagging colon and frequently gave rise to attacks of pain resembling appendicitis. In children, inflammation of the mesenteric glands must be remembered as a common cause of pain; tuberculosis of the glands lying along the right side of the mesentery was one type of inflammation, but healed calcareous glands between the ileum and ascending colon were liable to recurrent attacks of infection from the bowel, and were sometimes benefited by the removal of the appendix as a source of sepsis. Such calcareous glands could, of course, be seen radiographically. A second type of mesenteric adenitis was common in children, and usually simulated appendicitis closely. The temperature generally rose more suddenly than in appendicitis to about 101° or 102° F. There was not much nausea or disturbance of appetite, and there might or might not be furred tongue or bowel disturbance; commonly, looseness of the bowels preceded the attack. Tenderness would be found above and below the umbilicus along the right border of the rectus and the child would complain of pain on movement of the right leg; on opening the abdomen the peritoneum would be found to be œdematous and the glands much enlarged. Only rarely was the diagnosis of this condition from appendicitis so certain that it was safe to leave the case without operation. A chronic form of the same condition gave rise to pain of a similar distribution; usually the glands could be felt on palpation and a diagnosis of chronic appendicitis should be avoided. Renal causes, other than calculus, included tumour of the kidney, usually associated with bleeding; but occasionally when the tumour was not in connexion with the calyces or pelvis no hæmorrhage would be found. Tuberculosis might also exist unsuspected if it were so enclosed that the escape of pus was prevented, and a pyonephrosis might be present for some time without discharging pus into the bladder. As a rule, however, discharge occurred sooner or later. Renal calculus was usually

revealed by radiography and translucent stones were rare; in any case these would be revealed by pyelography. The persistence of a few red blood cells in the urine, seen microscopically, was a valuable indication of the presence of a stone. Slight and early cases of hydronephrosis gave rise to attacks of renal colic identical with those produced by a calculus, but there was no hæmorrhage, and pyelography would show the obliteration of the pyramids, with clubbing of the shadows of the calyces.

Ureteral strictures, said Mr. Marshall, was a definite entity and a cause of pain, but the normal constrictions of the ureter at various points must not be taken as pathological. Strictures might follow the passage of a stone, or it might occur independently as a result of a patch of ureteritis; the ureter was as liable to infection as the kidney, and probably the infection was blood borne from septic teeth and tonsils. Nephritis dolorosa—a very rare condition, but one which certainly existed—might cause persistent pain, and was essentially a neuralgic condition of the kidney. Mr. Marshall recalled a case on whom he had performed a pyelography without finding evidence of a calculus or stricture; no septic foci were present. The kidney was decapsulated with temporary relief, but recurrence of the pain led to a second operation for destruction of nerves to the kidney—also without success. Finally nephrectomy brought relief; a few sclerotic areas in the kidney were the sole pathological finding.

Disorders of the Menopause.

Mr. J. BRIGHT BANISTER, speaking on disorders of the menopause, said that the menopause was a condition common to both sexes, and only a small part of it was due to changes in the generative organs. The local changes in women consisted of a retrogression of certain organs and tissues occurring between the ages of 45 and 55 years; a gradual atrophy began in the uterus and its lining membrane, and was followed by an atrophy of the ovary. The labia showed a diminution in size, and there was a corresponding constriction of the vagina and reduction in size of the cervix. The ovary contracted, ova ceased to ripen, and there was marked deposition of fibrous tissue.

Gynæcological symptoms of the menopause included alterations in menstruation, usually taking the form of delay in the appearance of the periods and diminution in their duration. Alternatively, but less commonly, the intervals might be longer but the discharge more profuse for a period of 3 to 6 months; or the periods might be more frequent and more profuse for as much as a year. Irregular hæmorrhage, however, was emphatically not a symptom of the menopause, and should never be allowed to pass without an examination. Carcinoma of the cervix and of the uterus might be missed repeatedly if this sign, which was a challenge to the practitioner, were ignored. Similarly, any increase or change in vaginal discharge at this time called for thorough investigation. Irritation of the vulva was a common symptom at the menopause and called for local treatment. It was a stepping-stone in the atrophic degenerative process which might end in leucoplakia or carcinoma vulvæ, and it might also be a symptom of general disease. Vasomotor disturbances at this time included flushings, once said to be due to atrophy of the ovary; they were probably the result of restlessness of the endocrine system in its attempt to adjust itself to the new order; at present it was thought that the hypotensive action of the ovaries having been removed the hypertensive action of the adrenals came into play. Vasomotor phenomena were more marked during mental disturbance than during physical work, and dizziness, tingling of the extremities, and palpitations were all expressions of the same condition. In treating these symptoms it was necessary to impress on the patient that her sufferings were temporary. Many patients were in a state of nervous irritability at this time, and much could be done with old-fashioned bromide. In addition, this was a time when patients might fairly be given some glandular extract, and he had found ovarian extract grs. 5 with thyroid gr. 1 to give the best results. A reliable product must be used.

As a result of metabolic changes, said the speaker, many women were much distressed by obesity; nine out of ten persons in later life ate too much, partly because they did not realise that their needs were less. The patient should be advised to reduce her diet, and in addition thyroid and whole pituitary extracts, given with care, were most useful. Small doses should be given at first, and the patient watched for any signs of intolerance of thyroid; at the menopause the thyroid either diminished in size, or, less commonly, became more active. The course could begin with thyroid gr. ½ and whole pituitrin gr. ½; if no untoward symptoms were observed at the end of 14 days, the dose was to be doubled; at the end of another 14 days grs. 2 of each might be given, and then the dose might be increased by gr. ½ every 14 days until grs. 3 of each were being taken. It was almost unknown for a woman not to diminish in weight on this dose. Any tendency to diabetes, gout, chronic eczemas, and rheumatic conditions became more marked at the menopause, and it was important to be on the watch for them and to treat the general condition. Nervous irritability often characterised the years of the menopause, usually taking the form of an anxiety neurosis. If the mental condition was normal at the beginning the patient should be treated on common sense lines, with the suggestion that age was inevitable, and that there was an opportunity for everyone to be of use. It was not necessary for this state of mental instability to progress, in his opinion, unless there were some previous tendency towards lack of mental balance. It was essential that the patient should realise that her state was temporary and common to everyone.

Three glands, he said, were particularly concerned in the disorders of the menopause—the ovary, the pituitary, and the adrenal; the thyroid played a varying part. Headache associated with the menopause was commonly of a definite type, being short in duration, severe, and situated in different parts of the head. It usually occurred in women of the nervous, apprehensive type who were easily tired, and in whom the temperature was subnormal and the skin dry. They resembled early cases of myxœdema, and in 80 per cent. of them the headache could be cured by a regular régime to eliminate constipation, and by gr. 1 of thyroid thrice daily for three months. If the headaches were very severe the addition of luminal often cured them completely, and if the thyroid was continued the luminal could be gradually dropped. As had already been stated, the menopause was not confined to the female sex, and in Mr. Banister's opinion some of the cases of sudden death of business men were due to lack of care at a time when the vasomotor system was in a state of imbalance. The duration of the menopause varied. It usually began with the menstrual symptoms, but occasionally preceded them or followed the cessation of the periods. Symptoms might persist for as much as three years, but it was unwise to make any prophecy to the patient.

The Treatment of Some Septic Infections.

Prof. C. A. PANNETT, in discussing septic infections at the St. Mary's Hospital Post-Graduate Course, drew attention to the extreme paucity of real knowledge of local and general defence against septic infections though the number of organisms concerned was small, their characteristics were known, and a very great amount of research had been conducted for the elucidation of the problem. In spite of all, the surgeon often felt himself an onlooker only occasionally able, but still very certainly able, by rather gross methods favourably to influence the progress of the disease. He had come to recognise of what paramount importance are the natural resources of the body in recovery. These must be conserved, fostered, exploited. Hence it had come about that time-honoured measures such as the free evacuation of pus through a wide opening, the incision of inflamed areas to relieve tension, the frequent dressings and careful removal of foul discharge had all been subjected to the fierce eye of modern criticism, with the result that ideas had been adjusted and new techniques evolved. He illustrated these views by an account of acute osteomyelitis in children. After a brief consideration of the pathology and its bearing on treatment he pointed out that the minimum of operative interference was most effective. Large openings into the medulla of the bone gave twice the mortality of less restricted operations and diaphysectomy must be absolutely rejected. In the St. Mary's Surgical Unit multiple drillings of the metaphysis with a freshly sterilised tool for each hole were carried out and the drilling stopped as soon as the pathological area was overstepped, as proved by the material encountered. The resulting wound was then treated by the method of Winnett Orr, which he considered one of the greatest advances in treatment. This method was based upon the principles of Lister, Hilton, and Almroth Wright, and perhaps those much debated phenomena of Besredka also played a part. The method consisted in the complete encasing of the limb in a plaster-of-Paris splint after packing the wide open operative wound with vaseline gauze. No sutures of any kind were used to coapt the wound edges. The dressing was allowed to remain undisturbed for a considerable period, sometimes as long as three or four weeks. On removal, when the accumulated discharges were washed away, it was found that healing had proceeded to a remarkable degree. A new casing was then applied in a similar fashion. The advantages of the method were many. The frequent painful dressings were eliminated; there was no danger of an added implantation infection; the complete rest was appreciated by the patient and secured more rapid healing. In fact, the success of the method depended in large degree upon the immobilisation of the diseased tissues which allowed the healing process to go on undisturbed. In addition, also, it was quite possible that the presence of discharge inhibited bacterial growths and perhaps led to local fixed tissue-cell immunity. The sole disadvantage of the method was the disagreeable smell which accompanied it. This could be partly masked by the use of a few drops of some volatile oil, and in any case most patients preferred to get well quickly, and to this end were willing to put up with minor inconveniences. Orr's method was likewise applicable to septic compound fractures, and, indeed, almost any septic wound. Prof. Pannett concluded by reference to the part played by physiological methods in some other septic infections.

Some Common Minor Digestive Disorders.

Dr. T. C. HUNT, at the same course, spoke of some common digestive disturbances which tended to be rather neglected in text-books. The typical *bilious attack* or sick headache was usually an attack of migraine. One reason why migraine was not more frequently diagnosed was that the attack was often not of the classical pattern. The headache was commonly bilateral. Definite ocular symptoms might be slight, and in fact the typical "fortification figures" were only quite rarely seen. There was, moreover, a type of migraine—sometimes spoken of as *abdominal migraine*—in which headache was entirely absent. This type of attack, generally recognised as a "chill on the liver," might also be associated with gall-stones or cholecystitis and somewhat similar attacks might be produced by other causes. There should be little difficulty in distinguishing such conditions as acute appendicitis, but besides migraine and cholecystitis, two common conditions should be considered. The first was that of so-called gastric or abdominal influenza, the second that of acute food poisoning.

Gastric influenza was one of those intangible conditions whose very existence was denied by many. Dr. Hunt felt sure that such a condition did in fact exist, and in its diagnosis he stressed the following points: (1) It was primarily a general disease and only secondly an abdominal one—that is to say, the first symptoms were general: headache, malaise, muscular pains, after which digestive symptoms began; (2) it was rarely or never purely abdominal, and was almost always associated with throat or respiratory symptoms of some degree. There was moderate pyrexia, general aching and discomfort in the epigastrium, slight vomiting, marked anorexia, and great depression. Severe pain due to spasm of the colon might closely simulate acute appendicitis; in "abdominal influenza," however, there was no true rigidity, and little real deep tenderness. A blood count was of the greatest value since a leucopenia was typical of influenza, whilst appendicitis was associated with a leucocytosis. In treatment the combination of rhubarb and soda was, in Dr. Hunt's experience, the most efficacious of all dyspeptic mixtures, and aspirin as a rule was also useful and quite well borne.

Acute food poisoning, on the other hand, most usually began as a purely abdominal condition, after which general symptoms supervene. It was almost always associated with diarrhœa and more vomiting; the patient was more collapsed and the pain more severe and colicky. The whole colon might be very tender but any rigidity over it was generally fairly easily overcome by gentle coaxing.

In the differential diagnosis between abdominal migraine and gall-stones and cholecystitis there might be considerable difficulty. In all cases it was essential to consider whether the primary factor might not be a migrainous, constitutional, or hepatic one rather than a purely local one of the gall-bladder itself. It was, perhaps, no less important to diagnose between attacks of "abdominal migraine" and gall-bladder disease, than to decide if possible which of the two might be the primary condition. In *true cholecystitis* there were certain distinguishing features, notably a more or less localised tenderness over the gall-bladder area at the eighth and ninth right costal cartilages; pain was often worse on deep inspiration, and on percussion posteriorly the diaphragm might be found to move less than normally. Sometimes there

was definite pain on pressure over the right phrenic nerve between the heads of the sterno-mastoid, which pain might travel to the abdomen and the right shoulder. The cyclical nature of the attacks was not necessarily against organic gall-bladder disease; the patients were, however, less well after the attacks than are migraine subjects, and were liable to flatulence and mild dyspepsia in their free intervals. A cholecystogram was often of great assistance and biliary drainage may also be of value. In the diagnosis, however, a careful history was of vital importance. In spite of all care there would still be many cases in which the attacks appeared to be hepatic in origin, and in which evidence of gall-bladder disease was inconclusive, others in which the attacks could not be attributed solely to the presence of gall-stones, and some in whom they had persisted unchanged after removal of the gall-bladder. Evidence had accumulated of an association of hepatitis with gall-bladder disease, and Dr. Hunt urged that consideration should be given to the initial cause of liver dysfunction. This he believed might be in some cases migrainous or constitutional, in some bacterial.

In the *treatment* of the underlying hepatic dysfunction in the type of case described, four lines of treatment had been found to give good results: (1) When an "aura" of especial drowsiness occurred a day or two before the attacks began, large amounts of acetone bodies were often found in the urine together with urobilin; glucose should be given in full doses of 1 to 2 ounces three times a day during this period. (2) Dr. Hunt had used with great success decholin, a powerful cholagogue which had had a wide use abroad. This was similar to felamine and was a pure preparation of dehydrocholic acid. Dr. Hunt used it by mouth (two tablets three times a day). It was a powerful stimulant to biliary excretion, and probably also to the liver cells themselves. In addition to this such bile-salt preparations directly aid in the absorption of fats and also in the stimulation of the pancreatic secretion by virtue of their adsorbing action upon secretin. Patients should be warned that decholin might cause some abdominal discomfort at first. (3) Drainage of the bile by duodenal catheterisation was sometimes successful though it might have to be repeated. (4) Diet was, of course, a factor, quantity being of far more importance than quality; in some patients the fat tolerance is quite good, but few were able to take really large meals without some discomfort. Ices and cold drinks seemed to be specially bad in cases of cholecystitis, and eggs were apt to cause so much distress that their administration had even been suggested as a diagnostic measure. In migraine without gall-bladder disease no one article of diet was especially prone to provoke attacks, and the best advice was just that of moderation.

In summing up, Dr. Hunt said he had described a type of bilious attack which could be called abdominal migraine and might occur as a true constitutional disorder or in association with gall-bladder disease. Differentiation might be difficult, and even if the gall-bladder was diseased its removal might not relieve the attacks. The underlying cause in both cases was often a metabolic liver disturbance, and could often be treated successfully by the administration of glucose, bile-acids (e.g., in the form of decholin), moderation in diet, and sometimes by duodenal drainage of the bile. He discussed also functional dyspepsia in young people and dyspepsia in old people associated with (*a*) enlarged prostate (*b*) arterio-sclerosis.

MEDICINE AND THE LAW.

Artificial Cream Act Prosecution.

ON a prosecution by the Wiltshire County Council the firm of J. Lyons and Co., Ltd., was convicted at Swindon on Sept. 25th in a test case under the Artificial Cream Act, 1929, for selling "cream sandwiches" not containing cream as now defined by statute. Mr. Dyer, the Wiltshire county analyst, gave evidence that the contents of one sample were sugar and emulsionised fat, though he did not suggest that this article of food was not perfectly wholesome.

It may be remembered that, soon after the Food and Drugs Acts had been restated in an orderly form by the Food and Drugs (Adulteration) Act of 1928, a new patch was put on the fabric by the Artificial Cream Act at the instance of agricultural interests. The latter statute made it an offence to sell or offer for sale for human consumption under a designation including the word "cream" any substance purporting to be cream or artificial cream as defined in the statute except in two permitted cases. The first of these two cases is where the substance really is "cream" within the statutory definition—i.e., "that portion of natural milk rich in milk fat which has been separated by skimming or otherwise." The second case is where the substance is artificial cream as defined in the statute, and where the word "cream" is immediately preceded by the word "artificial." The statutory definition of "artificial cream" is "an article of food resembling cream and containing no ingredient which is not derived from milk except water or any ingredient or material which by virtue of the proviso to Subsection (2) of Section 2 of the Food and Drugs (Adulteration) Act, 1928"—i.e., the proviso which permits the addition of ingredients or material not injurious to health if added because required for the production or preparation of the article of food as an article of commerce in a state fit for carriage or consumption, and not fraudulently to increase bulk or weight or to conceal inferior quality—"may lawfully be contained in an article sold as cream."

The defendant firm urged strongly that the Artificial Cream Act was never intended to apply to the use of cream in confectionery articles, and that "cream" in the confectionery trade did not mean dairy cream, which was unsuitable because it would not keep wholesome in the ordinary circumstances of the trade. After witnesses from England, Scotland, and Ireland had given evidence in support of the defendants' view, the Bench, having to interpret the actual words used by Parliament rather than the supposed intention of the legislature, imposed a fine of £2 and costs on each of two summonses. More light will no doubt be thrown on the legal position on appeal. As was mentioned in THE LANCET a year ago (1929, p. 1271), there has been departmental support for the view that the Artificial Cream Act does not apply to fancy cakes or confectionery containing cream. Naturally the defendant firm, which claimed that this was the first complaint in 50 years, resented the suggestion of fraud. In view, however, of the language of the 1929 Act, it may be that the confectionery trade, driven by the restriction of preservatives to the use of "re-constituted" cream, must invent a new designation for what is at present called a cream sandwich.

Withholding Information.

The medical practitioner who gives evidence in workmen's compensation cases is regarded almost

as an officer of the court. The tribunal expects him to lay all the cards on the table, and is suspicious if there seems to have been any want of frankness. At the Westminster County Court last week a labourer employed by the Anglo-American Oil Company was applying for an award under the Workmen's Compensation Act. He had had his leg broken in August, 1929, by an accident while carrying a drum of motor-spirit. He was paid full compensation until May 27th, and he now claimed for continued partial disability. His panel doctor gave evidence that the workman had developed flat-foot in his left foot; he believed that it would get worse. He had seen the patient on May 6th in consultation with the respondent company's doctor, but had not pointed out the flat-foot to the latter. The county court judge, as well as counsel for the respondent company, accused the applicant's doctor of "hiding the ace of trumps up his sleeve"; apparently the suggestion was that the doctor had attempted to obtain some advantage for his panel patient by concealing the patient's disability at the moment when it could properly have been investigated by the medical adviser on the other side. The sensible proposal was made that the workman should now be seen by both doctors and a medical referee. The result of this joint examination, as announced in court by the judge, was that the workman's doctor agreed that, though there was a slight dropping of the arch of the left foot, there was no flat-footedness amounting to a pathological condition. The distinction may be somewhat subtle; it represented perhaps a compromise; it meant doubtless that, though the feet were not symmetrical, the difference between the left and right foot did not exceed the normal variation. The learned judge dismissed the application with costs. "The medical man in this case," he observed, "never said a word about this flat-footedness, of which he knew in May, till three days ago; there is no flat-footedness; he has been advising his patient to keep from work because of something which was non-existent."

Hard words break no bones; even allegations of card-sharping, applied figuratively, may sometimes be discounted in a forensic atmosphere. Fortunately, so far as the report of the proceedings indicates, the suggestion of fraud or dishonesty was negatived. The gravamen of the criticism was that the medical practitioner had acted as a partisan, and that his cleverness had been misguided. This merely illustrates the plain truth that, when a professional man gives evidence in a court of law, the more impartial and frank he shows himself, the more impressive will his testimony be.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

PROGRESS OF PUBLIC HEALTH IN THE IRISH FREE STATE.

IN the current number of the *Journal of State Medicine* is an article by Dr. Edward F. Stephenson, chief medical officer to the Department of Local Government and Public Health of the Irish Free State, which records with legitimate pride the progress made in public health administration in recent years. Dr. Stephenson claims that advance has been more rapid than in most other countries, yet the health schemes are laid on solid foundations, and are capable of expansion on definite lines. All the essential health services, including the medical inspection of school-children, are assembled under the control of the Minister for Local Government and Public Health, and complete coördination is in process of establishment in local administration. At the time of the passing of the Public Health Act in 1925, outside the county borough of Dublin there was no whole-time medical officer of health in the Irish Free State. It required an active educational campaign throughout the country and persistent pressure by the department to persuade the local authorities of the necessity of appointing medical officers of health. At the present moment there are 15 whole-time county medical officers of health, together with whole-time assistants as well as principals in the larger cities. It had to be remembered also, in making these appointments, that there were not a great many candidates available who would be likely to make efficient officers, and too great hurry might have resulted in the appointment of a proportion of comparatively incompetent men. The department recognised that the success of the new system of public health administration would depend largely on the proficiency and energy of the persons appointed as county medical officers of health. Dr. Stephenson draws attention to the establishment of diphtheria immunisation centres at Dublin and Cork, and to the activity of the medical inspection of school-children throughout the country. He mentions also that the veterinary staffs in Dublin, Cork, and Limerick have been strengthened, and that the supervision of meat-supplies is much more thorough than formerly. Naturally he does not tell us that much of the progress which he records is due to his own efforts, but everyone in Ireland who is interested in health knows well that the determination and courage of the Government's chief medical officer have been among the most potent factors in recent progress in health administration.

UNITED STATES OF AMERICA.

(FROM OUR OWN CORRESPONDENT.)

COSTS OF MEDICAL CARE.

THE Committee on the Cost of Medical Care has changed its name to the Committee on the Costs of Medical Care in order to emphasise that it is not the doctor's bill alone which is responsible for the expense of sickness. Their latest publication is a Survey of the Medical Facilities of Shelby County, Indianna. It shows that the people of this county spent over half a million dollars in 1929 for the care and prevention of sickness, or about $21 per capita. Approximately, one-third of this sum was received by physicians, one-third was spent on drugs and medicines, and one-third went to dentists, nurses, hospitals, and other agencies. The other agencies include one osteopath, five chiropractors, six Christian Science practitioners, an optometrist, and a chiropodist. These irregular practitioners collected $40,648, as compared with $153,915 paid to 31 regular physicians. It is interesting to note that, while $27,161 was spent on drugs prescribed by physicians, $160,000 was spent on drugs not so prescribed.

FIRST-AID BY THE ROADSIDE.

The American Red Cross is organising a roadside service of first-aid in an attempt to meet the rising tide of automobile accidents. Wayside shops, community centres, suburban stations of State police will be equipped with first-aid outfits at points where accidents have been frequent in the past, and at the junctions of main arterial routes. A telephone directory of physicians, hospitals, and ambulances in the immediate vicinity will be available at each station. Volunteer automobile transportation will

be organised when necessary. Road signs will be put up indicating the direction of and the distance to the nearest first-aid station.

INSPECTION OF THE BODY.

A recent decision of the New York State Court of Appeals is of unusual interest. The defendant in a personal injury case sought to have a blood test made of the plaintiff's blood. The lower court had held that the State law entitling the defendant to a physical examination of the plaintiff was not broad enough to include an examination of the plaintiff's blood. The appeals court pointed out that in the State of New York the English common law forbidding inspection of the body of a party in a personal injury action has been deliberately changed in the interest of the defendant in such cases. The purpose of the State law, so says the court of appeals, is "to afford protection to defendants, to enable them to discover the truth in regard to injuries claimed to have been received by plaintiffs, and thereby to promote justice."

EPIDEMIC MENINGITIS.

The Department of Public Health of the State of Massachusetts has inaugurated a diagnostic service for the detection of epidemic meningitis, a service which is put freely at the disposition of the physicians of the State. In the three months during which this offer has been extended, 20 patients have been referred. Of these, nine were found to be suffering with meningococcus meningitis and the remainder to have types of meningitis, encephalitis, cerebral apoplexy, or other conditions. All the patients had signs of meningeal irritation and diagnosis was made by laboratory examination of the spinal fluid. The success of this service in its preliminary trial has decided the health commissioner to continue it on a permanent basis. A similar but distinct service for the diagnosis of poliomyelitis has been functioning already for some time.

MEDICAL STUDENT LOANS.

Many students in this country embark on a medical curriculum with only the most slender resources. They serve in the vacations as waiters or chauffeurs or in other ways and even work in the evenings or at meal-times during term time. In this way many very successful doctors have won their diplomas and much valuable experience in the school of life; but not, of course, without some sacrifice of academic efficiency. An editorial in the *Nebraska State Medical Journal* proposes that the medical society interest itself in the organisation of a student loan fund, to be used to help senior medical students and internes. "Several agencies," we are told, "assist worthy, needy students in the Omaha medical schools, notably the Nebraska Federation of Women's Clubs. The need, however, exceeds the resources of the funds provided."

PANEL AND CONTRACT PRACTICE

The Insurance Acts Committee.

THIS Committee includes the majority of members selected by the local medical and panel committees of the country, and deals with all matters arising under the National Health Insurance Acts. It has received recognition from the Ministry of Health. In view of the B.M.A. scheme for the foundation of a general medical service, under which, among other things, the scope of the Insurance Acts would be extended and "home hospitals" instituted, the Report of this committee is of interest to the whole medical profession; 14,000 panel practitioners are definitely concerned, and what affects such a fraction of the profession is necessarily vital to the interests of us all. The last Report of the Committee deals in detail, among other things, with certification and prescribing, while it includes the opinion which the Committee has formed as to the actual time at which the insured person is entitled to obtain medical benefit, a question that often seems puzzling to the public.

CERTIFICATION.

At the Annual Conference in October last (THE LANCET, 1929, ii., 942) it was decided that statistics collected by the Ministry of Health as to the issue of certificates by insurance practitioners in each area should be circulated to panel committees. The representatives of the Insurance Acts Committee pointed out that, although they asked for that information to be circulated, it did not necessarily follow that any hard-and-fast deductions should be or could be based upon the result. The representatives thought that the issue of the data would bring home to the practitioner the number of books he was using as compared with the number used by a colleague with a similar practice. In the end it was agreed that the data should be issued by Insurance Committees direct, and only to the medical practitioners concerned, as circulation to the panel committees might lead to prejudice.

Certification in respect of pregnancy is a subject of some difficulty which is dealt with in the Report.

The Conference asked the Committee to consider the suggestion that when a medical practitioner has satisfied himself that an insured person is so far advanced in pregnancy that on that account she will not be able to work again until after her confinement, it shall be lawful for him to give a certificate to that effect, stating that the woman is unable to follow her employment, and that such certificate shall be sufficient warrant for the payment of sickness benefit until the termination of the pregnancy. The Committee, however, is not in favour of the suggestion, being in agreement with the views expressed in the B.M.A. scheme for a National Maternity Service stressing the importance of medical supervision during the antenatal period, especially during the later weeks of pregnancy. The Committee is also unable to support the suggestion that, as it is now customary for Approved Societies to pay sickness benefit on account of advanced pregnancy, a special certificate might be introduced for this purpose. The present forms, says the Report, are quite suitable for use in this case, which is opposed to the introduction of any more special certificates.

Change of doctor.—The Committee was invited by the Minister of Health to coöperate in reviewing the present arrangements which provide that an insured person may change his doctor at any time subject to a fortnight's notice, or immediately when both insurance doctors are agreeable. This matter was debated in the House of Commons in April last, when the considerable increase in sickness benefit claims experienced by societies in 1929 was under consideration. The question of excessive claims will now be investigated, says the Report, by Regional Medical Officers, but the Ministry is not prepared to assess the exact relation between changes of insurance doctors and improper claims upon insurance funds. The view of the Ministry of Health is that changes

of doctor should take place at quarterly intervals only, and that insured persons should be required to give at least a month's notice to the Insurance Committee of their desire to change. With regard to the provision, with certain modifications, existing between 1913 and 1927 that a change of doctor could only be affected at certain dates, the Committee holds the opinion, expressed by resolution in 1927, that a return to this arrangement was inadvisable. While recognising that the arrangement prevailing since 1927, under which a fortnight's notice may be given at any time before a change can be effected in the usual course, has definite advantages, the Report deprecates an extension of the principle. It is stated that the view is erroneous that laxity in certification attracts panel patients.

PRESCRIBING.

While the Conference approved the proposal of the Ministry to circulate to insurance practitioners comparable average figures as to the prescribing of practitioners in the area as a whole, the Committee has arranged that these figures should be regarded as confidential—though passing through the Insurance Committee's office the figures will not be disclosed except to the panel committee and the doctors concerned.

At the same time, the Committee urged the necessity for some improvement of the present position of practitioners in the matter of the payment for drugs necessarily or ordinarily administered by a practitioner, or drugs needed for immediate administration or application. It was pointed out that if the more specially expensive drugs are not included in the list appended to the Distribution Scheme, practitioners are put to considerable expense in this connexion, as the trend of modern treatment involves more and more use of the injection method of administering drugs. A small joint committee of representatives of the Ministry, the Committee, and pharmacists will meet quarterly, or at least half-yearly, for the purpose of considering additions to the list in question. It is anticipated that liver extract, when used in cases of pernicious anæmia, will be added to the list in question in the near future, and the position of other preparations is under consideration.

Preparations not ordinarily regarded as medicines.—The draft articles dealing with these substances, now issued by the Ministry of Health, are included in the Report, which points out that there is nothing mandatory in the list of substances considered to be "never drugs," "always drugs," or "sometimes drugs." But the lists are held to have a certain status until official decisions can be built up. Once an official decision has been arrived at that an article is "never a drug," the Insurance Committee will be able to recover its cost from the prescribing practitioner, while where an article, held to be "sometimes a drug," is found not to be a drug in a particular case, the Regional Medical Officer will bring the matter to the notice of the practitioner.

THE TITLE TO BENEFIT.

The following expression of opinion is contained in the Report as to the actual time at which an insured person is entitled to obtain medical benefit:—

A person becomes entitled to Medical Benefit as an insured person upon undertaking insurable employment and the payment of the first contribution by his employer. In order to secure the other benefits under the Act an insured person must become established as a member of an Approved Society or as a Deposit Contributor, and the lists of persons entitled to Medical Benefit are normally built up by the notification to the respective Insurance Committees by the Approved Societies of the names of insured persons as they become established as their members. Similar notification is made by the Department in respect of Deposit Contributors. By this process the bulk of insured persons become possessed of medical cards issued by Insurance Committees, for presentation to insurance practitioners, upon satisfactory evidence of insurability furnished by the Societies and the Department respectively. Pending establishment as a member of an Approved Society or as a Deposit Contributor an insured person is entitled to a medical card to enable him to obtain Medical Benefit, and the responsibility for the issue of a medical card rests with the Insurance Committee upon submission of evidence of insurance—e.g., contribution card or statement by employer. The medical card issued in these circumstances is available for three months only, before the end of which period the insured person has normally become established as a member of an Approved Society or as a Deposit Contributor.

MISCELLANEOUS.

Among miscellaneous matters dealt with in the Report several are of general importance.

Medical records.—The Committee has issued a circular asking Panel Committees to bring to the notice of constituents the necessity of keeping accurate records, and with respect to the production of such records before Medical Service Subcommittees the approval of the Ministry of Health has been obtained to an arrangement by which the consent of the insured person must first be obtained. The Committee holds that there must be no exception here where the practitioner is defending himself against a charge.

Insurance practitioners and access to voluntary hospitals.—A questionaire was issued last year to 813 voluntary hospitals, and replies were received from 648:—

Groups.	Questionaires issued.	Replies received.	Per cent.
London General Teaching Hospitals	12	8	66·6
London General Hospitals—			
with 100 or more beds	21	21	100·0
with less than 100 beds	27	19	70·37
London Special Hospitals	71	54	76·05
Provincial General Teaching Hospitals	16	16	100·0
Provincial General Hospitals—			
with 100 or more beds	105	90	85·7
with less than 100 beds	451	353	78·27
Provincial Special Hospitals ..	110	87	79·09
—	813	648	79·7

It was considered a fair assumption that a general view had been obtained. The Hospitals Committee of the B.M.A. having received the various replies, categorised as coming from hospitals with "restricted" or "unrestricted staff," and details as to the provision of private wards, expressed the opinion that increased opportunities of access by private practitioners to hospitals for the treatment of their own patients was desirable, with the result that the following was added to the revised Hospital Policy submitted to and approved by the Annual Representative Meeting of the Association in July:—

"In order that further opportunities may be afforded to private practitioners to treat their own patients in hospital the unrestricted staffing of general hospitals of less than 100 beds should be extended."

The Insurance Acts Committee, while of opinion that it is not for it to take any specific action in this matter at present, has noted the practice of many voluntary hospitals throughout the country in affording facilities to practitioners not on a selected staff to have access to their patients in hospitals. With the circulation and discussion of the Association's Hospital Policy and its proposals for a General Medical Service the question of greater facilities of the kind desired by the Conference is likely to obtain much more publicity. Whether the hospital authorities will favour this extension is a matter which depends greatly on how far practitioners in each area seize and use opportunities for impressing the Association's policy on the local voluntary hospitals, and the county and county borough councils.

The Report, full of considered and important matter, is timely on the eve of the Annual Conference

Prospects of National Insurance Development.

On Oct. 2nd the Minister of Health received a deputation from the National Association of Trade Union Approved Societies, which brought before him some resolutions on social insurance passed at the annual meeting of the Association held last June. While welcoming the appointment of a Cabinet Committee to survey the existing insurance schemes, the Association urged on the Government that legislation should be introduced as early as possible for the development of the National Health Insurance Scheme by the provision of such additional services as had been recommended by the Royal Commission. The deputation intimated that the Association contemplated the preparation of a memorandum for submission to the Cabinet Committee on the desirability of coördinating the present national insurance schemes. In reply, the Minister said the Government had felt the importance of obtaining a picture of the national insurance schemes as a whole and with this object had set up the Cabinet Committee. The task before the Committee was immense, and it was useless to suppose that a complete scheme could be framed in a short time or carried into effect in one stage. In the meantime he would like to consider improvements of the Health Insurance Scheme, and the possibility of an improved maternity service especially attracted him. But there were obvious financial difficulties as well as the difficulty of finding Parliamentary time.

Proposed Extension of Service in Scotland.

The resolution of the Edinburgh Burgh Insurance Committee that the time was opportune for the extension of domiciliary medical service (mentioned in this column last week) came before the conference of Scottish Insurance Committees, but did not please the meeting, which remitted it to its executive for consideration and report. Sir Henry Keith remarked that the motion contained many points for argument and controversy.

Highlands and Islands Board.

At the same meeting Dr. Alex. Shearer, attached to the Department of Health for Scotland, told the story of the medical and nursing services in the Highlands and Islands of Scotland which enabled the poorer classes to get prompt and adequate medical attention, and, to some extent, the services of nurses when needed. The justification of such a service lay, he said, not so much in the improved status, emoluments, and housing of doctors and nurses, however good and desirable these things might be in themselves, but in the extent to which medical and nursing services in adequate volume and of a high standard had been made available to people at a cost within their means. The treatment of women and children in the Highlands had, he said, been transformed by the fund. The service was not only a ready help at home, but a source of inspiration abroad, for in Kentucky, Newfoundland, and South Africa, ideas worked out and tested in the Highlands were being adopted.

Non-resident Panel Doctors.

At the last meeting of the Bournemouth Insurance Committee the application of a local doctor for inclusion in the medical list was challenged by a member of the committee on the ground that he did not intend to live at his surgery. There was consequently, he said, a danger of patients being unable to get in touch with him readily in an emergency. The chairman, Mr. A. T. Borthwick, J.P., overruled the objection, saying that, provided the practitioner made satisfactory arrangements for rapid communication, no exception could be taken, and there were already, in fact, several doctors in the town who were not living at their surgeries. Permission was granted on the understanding that suitable arrangements were made.

"Nearing a Climax."

At the annual conference of the Scottish Association of Insurance Committees, held at Inverness, the President, Mr. A. A. Dick, of Lanark County, said that the intensity with which the question of extending medical service under the insurance system was being discussed suggested that we were nearing a climax. It might be assumed, he said, that this service would include in its scope, and possibly have as its most prominent feature, the bringing of dependents under the National Health Insurance Act—a change long overdue. The Government was accredited with a more comprehensive scheme under which private practice might be reduced to a vanishing point. At the same time the British Medical Association had drafted a scheme for a general medical service. The real question which emerged was, he said, whether the people of this country should be medically treated by whole-time medical officers appointed by local authorities or the State, or, alternatively, whether the present scheme of medical service under the Insurance Acts should be widened so as to bring all within its purview, thus retaining the right of free choice which was the essential feature of the scheme. Personally, he said, he subscribed to the principle that the family doctor was the foundation of any complete and efficient medical service, and that there was no line of demarcation between preventive and curative branches of medicine. Every general practitioner, in fact, should be associated with all the health services. The passing of the old parish councils had raised acutely the question how to provide medical service for those too poor to pay for it. His own feeling was that, without waiting for the larger extension, local authorities, through their public assistance committees, should confer with local insurance committees in devising some method of contract under the insurance system. This, if it could be arranged, would do away with the present segregation of the poor, and reserve for them the valued right of free choice of doctor.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—Courses are in progress on Diseases of the Throat, Nose, and Ear at the Central London Throat, Nose, and Ear Hospital, continuing until Oct. 31st, and on Tropical Diseases at the Hospital for Tropical Diseases until Oct. 24th. From Oct. 13th to 24th the Chelsea Hospital staff will undertake a special course in Gynæcology occupying mornings and/or afternoons. From Oct. 27th to Nov. 8th a special course on Orthopædics will be given at the Royal National Orthopædic Hospital and at Brockley Hill Country Hospital. (The minimum entry is ten.) The Fellowship has arranged a series of lectures on Recent Advances in Medicine and Surgery, and Dr. G. E. Beaumont will give the opening lecture at the rooms of the Medical Society of London at 4 P.M. on Monday, Oct. 13th, on Recent Advances in the Medical Treatment of some Pulmonary Emergencies. On Oct. 13th, at 3.30 P.M., the first clinical demonstration of the winter session will be given at the Miller Hospital, Greenwich, by Dr. Harold Pritchard. On Oct. 14th, at 2 P.M., Mr. C. P. G. Wakeley will give a clinical demonstration in the out-patient department at King's College Hospital. The lecture and demonstrations are open to the medical profession without fee. Particulars of all courses may be obtained from the Fellowship at 1, Wimpole-street, London, W. 1.

CORRESPONDENCE

RECRUITMENT FOR NURSING.

To the Editor of THE LANCET.

SIR,—The medical profession seems curiously asleep in the face of an approaching crisis. More and more the doctor depends on the nurse; less and less will he find her. Nursing is going. The "big hospitals" still find recruits, a few may even have a waiting list; the lesser ones, cottage hospitals, sanatoriums, sidelines of all sorts, and the smaller poor-law infirmaries advertise in vain. They can attract neither probationers nor trained people for their senior posts. They run on two expedients: (1) the elevation of the ward maid, (2) the employment of the "temporary nurse." This variety represents those who have fallen by the way after a few months in hospital; they are employed by an agency which pays them about £60 a year, and charges £2 2*s*. a week for their services. They are in constant demand, so the agencies flourish and multiply while the hospitals groan under the expense and the lack of efficiency. What, then, becomes of all the nurses who pass out of the training schools year by year? They disappear down four main avenues: (1) public health work (with free evenings and week-ends); (2) work abroad (with variety, better social status, better pay); (3) private work (better pay); (4) administrative posts in hospital (better professional status).

None appear to desire a continuance of ordinary nurses' work in small or special hospitals in this country. Meanwhile, appeals are made to girls leaving school at 17 or 18. Eminent doctors and other notables give eloquent addresses on the human values of a nurse's life. Parents and guardians listen and remain cold. They think of the long hours, the short holidays, the restricted freedom, and the wear and tear of a nurse's life. They prefer to continue the educational struggle a year or two longer and offer their girl the wider choice of teaching, social work, or business. And yet the "notables" were right; nursing *is* a great work and can make use of the best that any human being has to offer. Why, then, are we letting it slip as an opportunity for our well-educated girls? Can no general coöperative effort be made to bring its conditions into line with those of other fields of employment, to modernise the service, and make it attractive?

Will not the public say to our profession, as it did to the civic fathers of Hamlin city:

> "Wake up sirs, give your brains a racking,
> To find the remedy you're lacking"?

I am, Sir, yours faithfully,

ESTHER CARLING,
Medical Superintendent, Berks. and Bucks. Joint Sanatorium.

Peppard Common, Oxon, Oct. 7th, 1930.

ORAL HYGIENE.

To the Editor of THE LANCET.

SIR,—It was unanimously decided by the Hygiene Commission of the Federation Dentaire Internationale, during the recent session held at Brussels, that an International Oral Hygiene Exhibition should form part of the Eighth International Dental Congress at Paris from August 3rd to 8th, 1931. The organising of this exhibition was delegated to a committee comprising representatives chosen from all countries affiliated to the F.D.I. In this way its international character is assured.

As it is most desirable that Great Britain should be adequately represented we should be glad if those who are in a position to assist with suitable exhibits relating to all branches of oral hygiene, including the teeth of children of all ages as well as those of adults, and the care of the expectant mother, would forward to either of the undersigned full particulars of any exhibits which they may be prepared to loan. This should be done as soon as possible, because the organisers of the Hygiene Exhibition will require to know before the beginning of December the exact space to allot to each country.

It is particularly requested that our colleagues will assist in making the British section of the exhibition eminently successful.

We are, Sir, yours faithfully,

ALFRED ROWLETT,
165, London-road, Leicester.
J. MENZIES CAMPBELL,
14, Buckingham-terrace, Glasgow, W.2,
Joint organisers for the British section of the Oral Hygiene Exhibition, Eighth International Dental Congress.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

C. D. Delacour de Labilliere to be Surg. Lt.

The following appointment is notified: Surg. Lt. J. G. Currie transferred to Permanent List.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lt. A. L. Gunn transferred to List 2, London Divn.

Surg. Sub-Lt. W. H. C. Watson to *Champion*.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. and Bt. Col. E. Ryan, having attained the age for compulsory retirement, is placed on retd. pay.

Maj. (temp. Lt.-Col.) B. Johnson to be Lt.-Col., vice Lt.-Col. and Bt. Col. E. Ryan.

Maj. W. F. M. Loughnan to be temp. Lt.-Col.

Capt. W. R. D. Hamilton to be Maj.

ARMY DENTAL CORPS.

Maj. T. K. Place, half-pay list, is restd. to the estabt.

ARMY RESERVE OF OFFICERS.

Lt.-Col. E. M. Pennefather resigns his commn.

TERRITORIAL ARMY.

Lt. R. Coyte to be Capt.

ROYAL AIR FORCE.

Flight Lt. (Hon. Squadron Leader) E. A. Wheeler (Temporary Maj., Army Dental Corps) is transferred from the Army to the R.A.F.

The undermentioned Flight Lieutenants, R.A.F., Temporary Captains, General List, Army, Dental Surgeons, are transferred from the Army to the R.A.F.: C. F. Pitt, A. R. H. Bennett, and A. P. McClare.

The undermentioned Flying Officers, R.A.F., Temporary Lieutenants, General List, Army, Dental Surgeons, are transferred from the Army to the R.A.F.: B. L. Harrington, A. P. Atkins, M. J. Pigott, and C. M. Leckie.

Flying Officer B. L. Harrington is granted a non-permanent commission as a Flying Officer.

COLONIAL MEDICAL SERVICES.

The following new appointments have been made: Dr. L. C. Mayne and Dr. R. N. Wilcox, Medical Officers, Nyasaland; Dr. J. H. Thompson, Senior Medical Officer, Palestine; Dr. M. Edwards and Dr. E. W. Martindell, Medical Officers, Straits Settlements; Dr. E. M. Weir, Lady Medical Officer, Straits Settlements; Dr. H. G. Floyd, Dr. A. J. Garde, and Dr. W. A. Wilson, Medical Officers, Uganda.

Dr. E. A. Cormack, Medical Officer, West African Medical Staff.

PUBLIC HEALTH SERVICES

REPORTS OF SCHOOL MEDICAL OFFICERS.

—	No. on roll.	Average attend-ance.	Routine inspec-tion.	Special exams. and reinspec-tions.	Percentage of defects.
City of Carlisle..	8,462	7,384	3,035	7,147	22·7
County of Cambridge	—	—	3,173	6,828	8·3

City of Carlisle.

Dr. Joseph Beard mentions that this will be his twenty-second (and last) annual report. There must be an interesting vista of changes and development that he could describe. Even in the last few years the improvements have been noteworthy; in the years 1926 to 1930, for instance, the loss of attendance through scabies has fallen from 181 school days to 159, then 117, and now 55. It is not a great matter but it is highly significant. Then there are all the workers in the new orthopædic scheme, including Miss Walker, C.S.M.M.G., who is employed as a whole-time orthopædic nurse and is responsible for the massage, splinting, plaster work, and certain remedial exercises. She attends at the clinics, helps in the light treatment, undertakes home visits, and is thus one of the most valuable of the additions to the staff appointed in recent years. Another development, and one which is not common elsewhere, is the system in Carlisle of testing the vision (as "specials") of children in the two years between the entrant and intermediate groups. Hitherto defective vision in children below 8 was seldom discovered unless it was obvious, since sight-testing is rarely feasible among entrants, and the new procedure may save a good deal of vision. Evidence of progress in the vital matter of enlisting the sympathy of the parents is shown in their attendances at medical inspections, averaging 36 per cent. But Dr. Beard is alive to the gaps that remain, for in connexion with dental work he says: "The large number of temporary teeth needing extraction is due to the fact that, owing to unsatisfactory feeding and neglect of cleanliness, by the time a child starts school its mouth is in a very unhealthy and septic condition. Children get no dental treatment before school age, and their parents appear to be ignorant of the fact that, unless temporary teeth are cared for, it is impossible to have properly formed and healthy permanent teeth." Many authorities, he adds, now provide dental treatment and supervision for the pre-school child, either by the education committee or as part of the child welfare and maternity work. There is no child from this area attending a school for epileptics; four such children are entirely out of school. The authority has no class for partially deaf or partially blind children, nor is there any special class for dull and backward or feeble-minded children. Dr. Beard might have said concisely, there is no special school of any kind in Carlisle and very few exceptional children are having any special education. Evidently his successor will have fields in which to carry on the work of progress and development.

County of Cambridge.

Dr. Frank Robinson suggests no explanation for the very low percentage of children found to require treatment; a few cases may have been eliminated by the close coördination of school and infant welfare work. Children below school age are visited systematically by the health visitor who will have to deal with them later in her capacity of school nurse. Those requiring treatment are referred for it, and when necessary sent to Addenbrooke's Hospital; early cases of squint are dealt with by the assistant medical officer. This early care of strabismus has undoubted value in preserving sight, and the scheme is now well developed with the help of a travelling ophthalmic clinic. Dr. Jessie Gellatly attributes most of the malnutrition she finds not to poverty but to heredity, and in many cases to mismanagement, where the mother is not of strong mental calibre. Others again, often the children of well-to-do parents, suffer from being permitted to do as they like. A small number are overworked at home, and benefit has resulted in a few aggravated instances from the ministrations of the N.S.P.C.C. Her interesting remarks suggest a grouping into (1) underfed children, usually from poverty; (2) wrongly fed children from parental inefficiency; (3) malnutrition connected not with diet but fatigue and defective home hygiene; and (4) constitutionally thin children who may have excellent homes. Each class needs its appropriate measures. For some, and especially the probably pre-tuberculous, malt and cod-liver oil are indicated, while for those who suffer from acidosis such things are worse than useless. Nearly all the groups are likely to benefit from the open-air school, and in this county selected cases are maintained in such schools. Dr. Robinson recalls some remarks in the last annual report of the Chief Medical Officer to the Board of Education: "Without the stimulating and sustaining influence of an organiser, physical training makes little or no progress. The areas in which competent organisers have been employed for some time are far in advance of the unorganised areas in every branch and aspect of work. In the one case there is progressive development and efficiency, in the other relative stagnation and inefficiency. . . . In most rural districts games as a regular and effective part of the children's physical education cannot be said to exist. . . . As physical culture becomes more fully recognised as an integral part of a liberal education, the less," he said, "shall we need formal and corrective work in physical training and the less shall we need medical treatment." The county is shortly to appoint its own organiser of physical training.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 27TH, 1930.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 82 (last week 61); scarlet fever, 1963; diphtheria, 1328; enteric fever, 63; pneumonia, 439; puerperal fever, 48; puerperal pyrexia, 101; cerebro-spinal fever, 7; acute poliomyelitis, 16; acute polio-encephalitis, 3; encephalitis lethargica, 10; continued fever, 1; dysentery, 7; ophthalmia neonatorum, 94. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Sept. 30th–Oct. 1st was as follows:—Small-pox, 196 under treatment, 2 under observation (last week 200 and 2 respectively); scarlet fever, 1464; diphtheria, 1780; enteric fever, 23; measles, 92; whooping-cough, 125; puerperal fever, 20 (plus 6 babies); encephalitis lethargica, 119; "other diseases," 32. At St. Margaret's Hospital there were 15 babies (plus 4 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 3 (1) from enteric fever, 5 (1) from measles, 5 (0) from scarlet fever, 11 (4) from whooping-cough, 36 (9) from diphtheria, 78 (21) from diarrhœa and enteritis under two years, and 20 (5) from influenza. The figures in parentheses are those for London itself.

The deaths from enteric fever outside London occurred at Northampton and West Hartlepool. Three deaths from measles were reported from Liverpool, 3 from whooping-cough at Salford, and 2 at Leeds. Liverpool also reported 4 deaths from diphtheria, Birmingham 3, Nottingham and Leeds 2 each. The deaths from diarrhœa numbered 7 in Liverpool, 4 each in Derby and Salford, 3 each in Birmingham, Hull, and South Shields.,

The number of stillbirths notified during the week was 278 (corresponding to a rate of 43 per 1000 births), including 44 in London.

OBITUARY

ARTHUR LONGLEY WHITEHEAD, M.B. Lond., F.R.C.S. Eng.

WE regret to record the death of Mr. A. L. Whitehead, consulting surgeon to the General Infirmary at Leeds. The son of Alfred Whitehead, of Poole, he was educated at Leeds Grammar School, the Yorkshire College, the Leeds School of Medicine, Vienna, and Berlin. He qualified M.R.C.S. Eng. in 1892, took his M.B. Lond. in the same year, and the B.S. with honours in 1893. Immediately after qualifying he became house surgeon to Sir Arthur Mayo Robson at the Leeds General Infirmary, and then resident ophthalmic officer, and shortly afterwards was put on the staff as honorary ophthalmic and aural surgeon. He lectured in his specialty at the University of Leeds from 1912 to 1925, and during this period made various contributions to literature, being specially interested in medical ophthalmology. In his turn he became president of the ophthalmological section of the Royal Society of Medicine, and of the North of England Ophthalmological Society, and served as Vice-President of the Ophthalmological Society of the United Kingdom. During the war he was a major in the R.A.M.C. Territorial Force. Mr. Whitehead was elected a Fellow of the Royal College of Surgeons in 1924 as a distinguished member of 20 years' standing, and much appreciated this honour.

A colleague writes: "By the death of Mr. Whitehead the profession loses a distinguished ophthalmologist. His colleagues have to mourn for a greatly loved fellow-worker, and a large circle of private and of professional friends will be deprived of the companionship of one for whom they entertained the highest respect. Mr. Whitehead was essentially a Leeds man; he received his medical education at the Yorkshire College and the old School of Medicine, and it was during his studentship that the affiliation of the Yorkshire College with the Victoria University was carried out. After graduation he returned to Leeds, and in 1899 was appointed to the honorary staff of the General Infirmary and in the same year, owing to the occurrence of two vacancies in rapid succession, he became a member of the full staff. It was not until 1912 that the departments of ophthalmology and oto-rhino-laryngology were separated, so that until that time a large amount of aural work fell to Mr. Whitehead. When, however, the old department was split up, Mr. Whitehead, along with his senior colleague, Mr. Secker Walker, decided to devote himself to the development of the ophthalmic part of his work, and the work of these two men added greatly to the reputation of the Leeds School. Mr. Whitehead was a man of sound scientific training, of great diligence, of high ideals, and of great personal charm. He carried out his work in a quiet unobtrusive manner, and those who are most competent to form an opinion regarded him as an operator of unusual dexterity and skill. In the session of 1925–26 he acted as president of the Leeds and West Riding Medico-Chirurgical Society, and his tact and courtesy in the conduct of the meetings were noteworthy though he never allowed time to be wasted. When Mr. Whitehead was appointed a consulting surgeon to the General Infirmary he retained and exercised the right to the use of a certain number of beds. In this way he maintained his connexion with the institution, and his loss will be felt by all connected with it."

HUGH THOMAS ARCHIBALD WARNOCK, F.R.C.S. Irel.

Dr. Warnock, of Donegal, died last week in a nursing home in Belfast. He retired a few months ago from his public appointments as dispensary doctor and medical officer of the district hospital in Donegal after 50 years' service, but, in spite of failing health, he was until a few weeks ago still engaged in busy private and consulting practice. He was held in great respect and affection both as a man and as a doctor. "By the practitioners of his own and neighbouring counties," writes a colleague, "he was regarded almost as an elder brother, to whom they went for advice and help in all their difficulties, and he never failed them. The profession at large trusted him equally, and he was for many years an active member of the councils of the several medical organisations. From 1927 to 1929 he was President of the Irish Medical Association. Wise in counsel, kindly, gentle, and courteous to all, he was loved wherever he went, but probably only the poor of his own district knew the full measure of his generosity. He was a man whose life-work raised the reputation of the profession of which he was a member."

AMELIA GERTRUDE GROGAN, M.B., B.Ch. R.U.I.

Dr. Gertrude Grogan, who died on Sept. 20th, while on holiday in Bavaria, was born at her father's rectory in Co. Wicklow and was educated chiefly at home. Her early college days were passed at Alexandra College, Dublin, and after graduating B.A. she took the M.B., B.Ch. degree of the Royal University of Ireland in 1895. For several years she was assistant medical officer at Mullingar Asylum, and later at Fulbourne Asylum, Cambridge, and she then settled down in general practice in North London, doing part-time medical work at the General Post Office. Dr. Grogan was one of the pioneers in child welfare work, and gave to it many years of voluntary service. At the time of her death she was medical officer to infant welfare clinics in Brixton and St. Pancras, and to the St. Luke's Day Nursery, Holloway. She was an ardent supporter of the St. John Ambulance Association, was divisional surgeon for Finsbury, and for about 20 years had lectured at the Northampton Polytechnic Institute on first-aid, home nursing, and hygiene. She spared no trouble in preparing for these lectures, and was always on the alert to find new illustrations and anything which could add interest to them. Her interests were many and varied. She was a keen student of Esperanto and had spent many holidays in attending congresses in its support.

A colleague writes: "Dr. Grogan was a most approachable person, with a great gift for setting people at their ease. Her Irish wit and ready invention improved every story that came her way, and she was never dull. All the mothers at the welfare loved her, for she was glad with them and sorry with them, but never impatient or hurried with them. Of her many talents one of her greatest was her talent for friendship. She had friends in all classes, and up to the time of her death still kept in touch with some of her patients in her early asylum work."

MEDICAL NEWS

HOSPITAL DINNERS.

St. Mary's Hospital.

There was a very large attendance of St. Mary's men of all ages at the Trocadero Restaurant on Oct. 3rd, when Dr. John Matthews, of the Therapeutic Inoculation Department, took the chair. The toast of "The Medical School" was proposed by Lieut.-Colonel H. E. Verey, chairman of the Board, who remarked with satisfaction that a contract for £200,000 had been signed, and that the rebuilding of the inoculation department would go on concurrently with that of the medical school. On the new island site accommodation would be provided for a nursing and domestic staff capable of dealing with 500 hospital beds. Dr. C. M. Wilson, who as dean of the medical school responded to the toast, said that the entry this year was exactly twice the entry in 1913, and the present policy was to reject candidates who were not well equipped for a medical career. When the school buildings and laboratories were completed in about 20 months space would be set free for enlargement of the hospital. It should then be practicable to ensure every capable student a resident appointment on qualifying. Mr. Warren Low, in proposing "The Chairman," spoke of his varied experience of life, and Dr. Matthews, in replying, gave reminiscences of his early life before the mast, and especially of four days when 1800 miles in the "roaring forties" were covered in a full-rigged ship. He expressed the regret of all St. Mary's men at the illness of Dr. Reginald Fuller, who was to have presided. Among the invited guests were the Vice-Chancellor of London University and the chairman of the Industrial Health Research Board.

Charing Cross Hospital.

The annual dinner for past and present students of Charing Cross Hospital was held at Gatti's Restaurant on Oct. 4th, with Mr. E. B. Waggett in the chair. In proposing the toast of the school and hospital, Mr. J. Bright Banister said that the recent election of one of the consultant obstetric professors, Dr. Watts Eden, to the presidency of the Royal Society of Medicine was a source of pride to the hospital. If the voluntary system was doomed, as some people thought, it lay in the hands of the medical profession to preserve the ideal of service for which the system stood. Students and staff must be ready, as they were at present, to subordinate their personal convenience to that ideal and to the welfare of the school. Mr. E. A. Crook, dean of the school, in a short and bracing speech, remarked that the number of entries of students had been doubled in the last 12 months. In proposing the health of the chairman, Mr. E. D. D. Davis spoke of the extension of the ear, nose, and throat department, which can now claim 18 beds and a separate operating theatre in the new wing. A programme of music, nicely balanced between the sentimental and the ribald, and including two songs of his own composition, was given by Dr. S. Taylor Harris.

Westminster Hospital.

A dinner celebrating the ninety-sixth anniversary of the foundation of this medical school was held at Grosvenor House on Oct. 1st. The chair was taken by Mr. S. Ernest Dore, who proposed the health of the school and the students, alluding wittily to the outstanding characteristics of each member of the staff. He announced that 31 students had joined the hospital this year, an increase of five on the previous year, and that Sir Henry Hadow, formerly Vice-Chancellor of Sheffield University, had become the chairman of the School of Medicine Committee. A special gift of £5000 has afforded excellent opportunities for development of the children's department of the hospital. Dr. H. Cecil Barlow, replying for the school, commented on the high proportion of old Westminster students on the staff, and described adventures in provincial practice. Mr. N. Heath replied for the students, and said that the school had at last achieved a real sports' union and had carried off the Junior Association Hospitals' Cup for the first time. The health of the visitors was proposed by Dr. Adolphe Abrahams, and responded to by the Rev. J. Scott Lidgett, Vice-Chancellor of the University of London. "The Chairman" was proposed by Mr. Arthur Evans.

St. Bartholomew's Hospital.

Bart.'s makes no ceremony of the opening of the winter session; the dinner on Oct. 1st is simply the occasion when old students revisit the hospital, observe for themselves what changes are taking place, and meet their old friends on the staff and in practice. Special significance was given to the gathering on this occasion by the presence of the Lord Mayor and the two sheriffs-elect, as well as the masters of six City companies, all of whom are deeply concerned in the development of the hospital within the City gates. Mr. L. B. Rawling made a genial chairman and his review of hospital life within his own memory was full of graphic touches. He joined the school by accident as he was on his way to cross the Thames, when he was intercepted and finally bound over by Dr. T. W. Shore, whose 50 years' association with the hospital has just come to an end. A surgeon himself, Mr. Rawling attributed to the surgical staff most of the initiative in expansion. It was in 1910 that the late Mr. C. B. Lockwood recognised that the hospital required reconstruction from top to bottom and was game enough to maintain this unpopular opinion. Sir Holburt Waring had been everywhere and seen everything in order to make the new surgical block the model of what it should be, and one of the wards in this block had been named after him. The opening of this block two months ago had made it possible to house under one roof the previously scattered obstetrical and gynæcological departments. Not content with these changes, Mr. Rawling hinted to the City magnates that they would presently be asked for a new medical block, new accommodation for residential students and paying patients, and new departments for X rays and anatomy. Guests at the dinner were Lord Stanmore, treasurer of the hospital, the President of the Royal College of Physicians, and the medical heads of the three fighting Services. As the senior man present Surgeon-General P. H. Benson was allowed to make the only speech.

Middlesex Hospital.

The annual dinner of past and present students was held at the Savoy Hotel on Oct. 1st. Dr. C. E. Lakin, who presided, said that of the million pounds needed a year ago to complete the new hospital two-thirds had been received. He evidently feared, however, that some of the arrangements would compare unfavourably with those at Cos—whence Hippocrates spread the modern ideas of healing by simple agents like sunlight and fresh air—and he pleaded that a good sun balcony should be provided even at the cost of symmetrical façades. With all the innovations and improvements, he regretted that students could no longer have the benefit of the collegiate life he had himself so much enjoyed. Dr. Lakin referred to Mr. Watson Turner's appointment as consulting dental surgeon, and Mr. S. A. Courtauld (vice-president of the hospital) spoke of the retirement of Prof. Swale Vincent and the impending resignation of Mr. Comyns Berkeley from the active staff. Prof. Vincent had been succeeded in his university chair by Dr. Samson Wright. Dr. T. Izod Bennett referred to signs of a classical revival at the Middlesex, and as an example of politeness told of a child who was asked: "Have you had your bowels open to-day?" and answered "Yes, thank you, doctor. Have you?" This precedent doubtless encouraged Mr. Sampson Handley to mention a sailor who had had 15 piles removed at Middlesex and came back later to boast that he had fought for the honour of the hospital in all the ports of the world. Mr. Handley said that whereas formerly doctors had descended from Harley-street to relieve the necessitous poor they now came to advise their fellow citizens; and soon perhaps the necessitous poor would descend from Harley-street to minister to the élite of democracy. Dr. P. B. Ascroft, as Senior Broderip Scholar, showed a disposition to look gift-horses in the mouth; Mr. R. J. Meller, M.P., maintained that the success of the Middlesex appeal showed that the public still had faith in medicine; Dr. Henry MacCormac proposed the health of the Chairman; and Dr. Lakin closed the formal proceedings with a pleasant story about revenge and the blood of a rat.

St. George's Hospital.

The annual dinner of the medical school was held on Oct. 1st at the Hyde Park Hotel, when more than one hundred past and present St. George's men enjoyed a pleasant evening. The chair was taken by Dr. James Collier, late senior physician to the Hospital, and the chief guests were Lord Riddell, who had delivered the annual oration in the afternoon, Prof. D. M. Blair, dean of the faculty of medical science at King's College, the Provost of University College, Dr. F. N. Kay Menzies, and Capt. the Rt. Hon. C. C. Craig. An excellent dinner was followed by the usual toasts, which called forth a series of witty and interesting speeches. The dean announced that the entries for the coming year were well up to standard as regards both quantity and quality, and he looked forward to a successful year for the medical school.

St. Thomas's Hospital.

Old students of this hospital now have a permanent meeting-place in St. Thomas's House, and their annual dinner on Oct. 3rd was again admirable, both in setting and arrangement. Having entered the hospital 51 years ago the chairman, Dr. R. Muzio Williams, was impressed by the many advantages enjoyed by his successors, ranging from rapid service of meals to departments of pathology. Sir Arthur Stanley (treasurer of the hospital) seemed less perturbed by the horrors of the past than those of the present—notably the fact that he had to inform King Edward's Fund that the hospital wanted £350,000. However, there was a bright side: £100,000 had been unexpectedly received from Lady Houston; Sir William Morris's generous gift would bring in £16,000 a year for two or three years more; only the other day £30,000 was given anonymously; and at last a use had been found for the Triangle purchased for £8000 30 or 40 years ago. It was to be devoted to midget golf. Prof. L. S. Dudgeon, as dean of the medical school, reported that the number of students was now greater than ever before, and their quality was ensured by selection. On the retirement of Dr. A. E. Russell Dr. Harold Gardiner-Hill had joined the honorary staff, and Mr. Pierce Lloyd-Williams had been appointed assistant dental surgeon. Dr. Dudgeon mentioned that Mrs. Caiger had endowed an exhibition at the hospital in memory of the late Dr. Foord Caiger. Mr. Cyril Nitch gave a comprehensive and enlivening account of the guests, and Lord Riddell, in reply, attributed the doubtful reputation of the peerage to families like the Stanleys, whose buccaneering instincts came out in Sir Arthur's astoundingly successful appropriation of money for St. Thomas's. Mr. E. F. White proposed the health of the chairman, and Dr. Williams aptly replied.

University of London.

University College.—Dr. J. C. R. Hindenach and Dr. C. P. Bryan have been appointed demonstrators in the department of anatomy and embryology.—Dr. H. P. Gilding will lecture on the Reticulo-endothelial System at 5 P.M. on Oct. 13th, 20th, and 27th, and Nov. 3rd, and Dr. L. E. Bayliss on the Respiratory Functions of the Blood, at the same hour, on Nov. 10th, 17th, and 24th, and Dec. 1st.

University of Dublin.

At recent examinations in the School of Physic, Trinity College, the following candidates were successful:—

FINAL EXAMINATION FOR M.B., B.CH., AND B.A.O.

Part I. Therapeutics, Hygiene, Pathology, &c.—*D. S. Torrens, J. N. Concannon, J. R. Counihan, W. J. Craig, P. W. O'Ryan, Edith M. P. Brodrick, C. H. M'Mahon, J. J. Russell, J. W. Craig, P. G. Daly, Francis King, Dorothy R. R. Solomons, and W. T. Bermingham.

* Passed on High Marks.

Royal Dental Hospital, School of Dental Surgery.

The annual dinner of the staff and past and present students of this hospital will be held at 7 P.M. on Saturday, Nov. 22nd, at the Trocadero Restaurant, Shaftesbury-avenue, with Dr. Harvey Hilliard in the chair. The Medical Committee will be At Home to past and present students on the same day from 9.30 A.M. to 5 P.M. In the morning demonstrations will be given by members of the staff and lecturers, and in the afternoon orthodontic and other cases will be shown. Medical practitioners are invited to attend.

Rebuilding of Middlesex Hospital.

Four wall paintings by the late Mr. Cayley-Robinson, which were placed in the entrance hall of the old Middlesex Hospital now being demolished, have been lent to the Tate Gallery pending their re-erection in the new hospital buildings. There are few modern instances of mural decoration more admirably suited to their surroundings than these four panels, which were commissioned by and the gift of Sir Edmund Davis, a well-known connoisseur. They were lent to the memorial exhibition of the artist's work at Burlington House recently, and are good examples of his gifts of sound drawing, delicate colouring, and, above these, his poetic imagination. The first two panels represent a refectory scene with figures of girls in blue uniforms seated and standing, their youthfulness suggesting orphans rather than nurses. The artist has intimated with subtlety the lamplight within and the twilight without. The third panel represents an entrance porch and flight of steps, with figures grouped round, and these might be said to depict the universal ages and types of hospital patients, the inclusion of a blue uniformed soldier commemorating the part played by the Middlesex Hospital in nursing the wounded during the great war. The fourth panel shows in a symbolical fashion the succour of the poor and the weak.

Seamen's Hospital, Greenwich.

Two further beds endowed by the Seamen's Hospital Aid Committee have recently been dedicated, making altogether 12 beds which the hospital owes to the activities of the committee.

Detection of Mustard Gas in Air.

The International Red Cross Committee at Geneva announces that its competition for the discovery of a reagent for the detection of mustard gas in the air is to close on Dec. 31st. The prize offered is 10,000 Swiss francs (£400). The competition is the first step in a Red Cross campaign for the protection of civilians in war-time. It is to be followed, if funds permit, by competitions to discover the best civilian gas-mask and the best means of purifying the air in subterranean shelters. Full particulars of the competition may be obtained on application to the committee, 1, Promenade du Pin, Geneva.

Memorial to Pinel.

The French Ambassador, M. de Fleurian, recently unveiled a memorial of Prof. Philippe Pinel at the Royal Edinburgh Hospital for Mental Diseases. It takes the form of a bronze bust, a replica of that in the Academy of Medicine in Paris, and bears the inscription, "Philippe Pinel, 1745–1825, to commemorate the centenary of his death." It is placed in a niche on the wall near the entrance to the hospital. Many years ago a bust of Pinel was placed over the entrance archway of the hospital, which is now at the back. This was, in fact, the first memorial to him, no statue having been erected until 1885.

New Nursery Schools in London.

Two schools, provided by the London County Council as an experiment, were opened on August 26th in East London, each with accommodation for 150 children, boys and girls, from 2 to 5 years of age. The schools are open on the same days as elementary schools from 8.30 A.M. continuously to about 4 P.M., lunch, dinner, and tea being provided at a charge of 6*d.* a day. Children living within about three-quarters of a mile of the schools may be nominated for admission by the borough medical officer of health, the head teachers of nearby infants' schools, the district organiser of care committees, the divisional education officer, and the divisional medical officer.

London Clinic and Nursing Home.

The first ordinary general meeting of the London Clinic and Nursing Home, Ltd., was held last week, the Duke of Atholl, the chairman, presiding. The accounts show that £105,415 has been expended in the purchase of the site and the erection of the building in Harley-street; two additional leasehold sites, Nos. 147 and 149, Harley-street, have been purchased with the object of securing greater convenience. This purchase will provide 15 additional bedrooms and six more consulting-rooms. There will now be 195 patients' bedrooms and 36 consulting-rooms; the whole of the consulting-rooms have been let to doctors representing the medical group identified with the clinic. The chairman of the medical group, Dr. H. Moreland McCrea, has joined the board. It is hoped to have the building completed by July next, at the latest.

Medical Defence Union.

At the annual general meeting held in London on Oct. 2nd, Sir Herbert Waterhouse, the President, spoke of the continued growth and financial stability of the Union and of the value of membership. Claims against medical practitioners, he said, were increasing in frequency, and with the changing conditions of medical practice were likely to increase still more in the future. The Union could only defend its own members, and they must be in benefit not only when the claim was made but also when the incident occurred out of which the claim arose. In no less than 12 cases where proceedings were threatened against members the case was dropped as soon as it was known that the Union would defend. In six cases where proceedings were threatened the Council was not satisfied that a successful defence was possible, and authorised the solicitor to effect a settlement on reasonable terms. In every case that was heard in the courts the verdict was in favour of the member. Cases of fracture had, as usual, given most anxiety, and this year there had been an unusual number of claims for compensation on account of broken hypodermic needles. Members were greatly assisted in the varied difficulties of their professional work by the wise advice they received daily from the executive officers of the Union. The President concluded by thanking Dr. James Neal and Mr. Oswald Hempson personally for their work as general secretary and solicitor respectively. The report of the Council and the financial statement for 1929 were adopted unanimously, and Dr. W. T. Lydall, Dr. Henry Robinson, and Dr. Seymour Taylor, the retiring members of Council, were re-elected.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, Oct. 13th.—5 P.M., UNITED SERVICES. Presidential Address: Surgeon-Captain S. F. Dudley, O.B.E. R.N.: Some Psychological Aspects of Specialism and Research in the Services.

TUESDAY.—5 P.M., THERAPEUTICS. GENERAL MEETING OF FELLOWS at 8.30 P.M. Dr. Chevalier Jackson (U.S.A.) will give a lecture on Suppurative Diseases of the Lungs, illustrated by lantern slides.

THURSDAY.—5 P.M., DERMATOLOGY. (Cases at 4 P.M.). Dr. J. E. M. Wigley: Mycosis Fungoides (with sections). Exfoliative Dermatitis, Associated with Rheumatoid Arthritis. Dr. F. Parkes Weber: Urticaria Pigmentosa in an Adult. Telangiectasia Macularis Eruptiva Perstans, Possibly a Variety of Urticaria Pigmentosa, in an Adult. Dr. H. W. Barber: Lupus Erythematosus and Alopecia Totalis. Other cases will be shown.

FRIDAY.—8 P.M., OBSTETRICS. Short Communication: Vaginal Metastases in Uterine Carcinoma. Paper: Dr. W. H. F. Oxley: The Organisation and Methods of Practice of the East-end Maternity Hospital. 8.30 P.M., ELECTRO-THERAPEUTICS. Presidental Address: Prof. J. M. Woodburn Morison: Radiology—Its Progress and Future.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, Oct. 13th.—8 P.M., Annual General Meeting. 8.30 P.M., Dr. R. A. Young: Presidential Address on The Stethoscope: Past and Present.

HARVEIAN SOCIETY OF LONDON.

THURSDAY, Oct. 16th.—8.30 P.M., A Clinical Meeting will be held at the Hammersmith Hospital, Ducane-road, W.

SOCIETY FOR THE STUDY OF INEBRIETY.

TUESDAY, Oct. 14th.—4 P.M. (in the rooms of the Medical Society of London, 11, Chandos-street, W.), Dr. Macdonald Critchley: Some Forms of Drug Addiction.

PADDINGTON MEDICAL SOCIETY.

TUESDAY, Oct. 14th.—9 P.M., in the Great Western Hotel, Dr. W. G. Bendle: Local Hospital Topics of Interest to the General Practitioner.

SOCIETY OF RADIOGRAPHERS.

WEDNESDAY, Oct. 15th.—7 P.M. (in the Reid-Knox Hall, 32, Welbeck-street, W.), Presidential Address by Mr. Cyrus L. Winch. An Address by Mr. E. C. Jerman, (President Emeritus of the American Society of Radiographers).

THURSDAY.—8.30 P.M., Dr. J. F. Bromley: The Use of Negative Paper (with demonstration). Capt. A. R. Wood: Ultra-violet Glasses (with demonstration). Dr. G. Simon: The Use and Technique of Diathermy in the Treatment of Pneumonia.

FRIDAY.—2 P.M.-4 P.M., Visits to the Radiological Department of St. Mary's Hospital, Paddington.

ROYAL MICROSCOPICAL SOCIETY.

WEDNESDAY, Oct. 15th.—(In the Hastings Hall, B.M.A. House, Tavistock-square, W.C.), 5 P.M., The President and Mrs. R. Ruggles Gates will hold an informal Reception. 5.30 P.M., Mr. J. E. Barnard, F.R.S: Histological Preparations. 6 P.M., Dr. G. M. Findlay: Recent Research on Malarial Parasites.

ROYAL SOCIETY OF TROPICAL MEDICINE, 11, Chandos-street, Cavendish-square, W.

THURSDAY, Oct. 16th.—7.45 P.M., Demonstration. 8.15 P.M., Dr. Frank Marsh: Ætiology of Heat Stroke and Sun Traumatism.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.

SATURDAY, Oct. 18th.—4 P.M., Prof. J. B. Leathes, F.R.S.: Harveian Oration.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Oct. 13th, to SATURDAY, Oct. 18th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W., Special M.R.C.P. Lectures: Mon. at 5 P.M., Mr. C. L. Gimblett, General Medical Ophthalmology (Illustrated by Epidiascope). Tues. at 8.30 P.M., Dr. L. S. T. Burrell, Intrathoracic Tumours.—On Mon., Oct. 13th, at 5 P.M., there will be a free lecture by Dr. G. E. Beaumont on Recent Advances in the Medical Treatment of Some Pulmonary Emergencies.—CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C., Intensive Clinical Course.—CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S.W. Two weeks course.—TROPICAL HOSPITAL, Gordon-street, W. Second week of course.—MILLER GENERAL HOSPITAL, Greenwich, S.E. Mon., 3.30 P.M., Dr. Harold Pritchard: Clinical Cases illustrating Modern Methods of Diagnosis and Treatment. No fee.—KING'S COLLEGE HOSPITAL, Denmark Hill, S.E. Tues., 2 P.M., Mr. C. P. G. Wakeley: Clinical Demonstration Out-patient Department (General). No fee.—Further particulars from the Fellowship of Medicine.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.

MONDAY, Oct. 13th.—10 A.M. to 1 P.M., Surgical Wards, Genito-Urinary Operations, Skin Department. 2 P.M., Operations, Surgical Wards, Medical, Surgical, Eye and Gynæcological Out-patients.

TUESDAY.—10 A.M. to 1 P.M., Medical Wards, Clinical Demonstration (Surgical Dental Department). 2 P.M., Operations, Medical, Surgical, and Throat Out-patients.

WEDNESDAY.—10 A.M. to 1 P.M., Medical and Surgical Wards, Children's Medical Out-patients. 2 P.M., Gynæcological and General Operations, Medical, Surgical, and Eye Out-patients.

THURSDAY.—10 A.M. to 1 P.M., Neurological Out-patients, Demonstration of Fractures. 2 P.M., Operations, Medical, Surgical, and Genito-Urinary Out-patients.

FRIDAY.—10 A.M. to 1 P.M., Medical Wards, Skin Department, Dental Department, Clinical Demonstration (Medical). 2 P.M., Operations, Medical, Surgical, and Throat Out-patients.

SATURDAY.—10 A.M. to 1 P.M., Throat Operations, Bacterial Therapy Department, Medical Wards, Children's Medical and Surgical Out-patients.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Oct. 13th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose, and Throat Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Throat, and Ear Clinics. Operations.

FRIDAY.—10.30 A.M.: Ear, Nose, and Throat Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Children's Diseases Clinics. Operations.

LONDON HOSPITAL POST-GRADUATE COURSE.

WEDNESDAY, Oct. 15th.—10.15 A.M., Dr. Donald Hunter: Vitamins. 11 A.M., Dr. W. J. O'Donovan: Major Skin Affections of Childhood. 12 noon, Mr. Hugh Lett: Enlarged Prostate. 1.30 P.M., Mr. Hugh Cairns: Treatment of Trigeminal Neuralgia. 2–3 P.M., Mr. W. S. Perrin: Demonstrations of Cases treated by Radium. 2–4 P.M., Mr. E. C. Lindsay: Surgical Operations. 2–3.30 P.M., Dr. John Parkinson: Ward Demonstration. 3.45 P.M., Dr. George Riddoch: Diagnosis and Treatment of Parkinsonism.

THURSDAY.—10 A.M., Dr. A. Maitland-Jones: Some Nutritional Disorders in Infants. 11 A.M., Mr. C. B. Goulden: Injuries of the Eye. 12 noon, Mr. Eardley Holland: Some Common Obstetrical Problems. 1.30 P.M., Dr. Russell Brain: Some Causes of Pain in the Leg. 2–3.30 P.M., Dr. R. A. Rowlands: Ward Demonstration. 2–4 P.M., Mr. H. S. Souttar: Surgical Operations. 2–3.30 P.M., Mr. Victor Lack: Ante-Natal Clinic. 3.45 P.M., Dr. O. Leyton: Diabetes.

FRIDAY.—10 A.M., Dr. T. Lumsden: Immunity in Relation to Malignant Disease. 10.30 A.M., Mr. Alan Perry: Infections of the Hand. 11 A.M., Mr. Norman Patterson: Demonstration of Cases and Specimens. 12 noon, Mr. G. E. Neligan: Cystitis. 1.30 P.M., Dr. A. E. Clark-Kennedy: Dyspepsia (Ward Demonstration). 1.30–3.30 P.M., Mr. A. J. Walton: Surgical Operations. 2.30 P.M., Dr. Theodore Thompson: Ward Demonstration. 4.15 P.M., Mr. H. S. Souttar: Radium in the Service of Surgery (Schorstein Memorial Lecture). 9 P.M., Dr. Ashley Daly: Methods of Anæsthesia (Demonstration, if requested.)

SATURDAY.—10 A.M., Dr. G. Vilvandré: Some Pitfalls in X Ray Diagnosis. 11 A.M., Mr. Russell Howard: Ward Demonstration. 12 noon, Mr. A. J. Walton: Present State of Thyroid Surgery.

KING'S COLLEGE, Strand, W.C.

WEDNESDAY, Oct. 15th.—5.30 P.M., Sir Humphry Rolleston: Medicine as a Career. (Public lecture.)

THURSDAY,—5 P.M., Mr. J. A. Hewitt, Ph.D., D.Sc.: Metabolism of the Carbohydrates and Fats (first of four free lectures).

UNIVERSITY COLLEGE, Gower-street, W.C.

MONDAY, Oct. 13th.—5 P.M., Dr. H. P. Gilding: The Reticulo-endothelial System (first of four free lectures).

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, Oct. 13th.—12 noon, Dr. Greenfield: Pathology of the Nerve Fibre. 2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Hinds Howell: Disseminated Sclerosis.

TUESDAY,—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Adie: Migraine.

WEDNESDAY,—2 P.M., Dr. Purdon Martin: Out-patient Clinic.

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Critchley: Alzheimer's Disease.

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Mr. Elmquist: Demonstration of Re-educative Exercises.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, Oct. 15th.—4.30 P.M., Mr. R. H. Jocelyn Swan: Cancer of the Bladder.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

WEDNESDAY, Oct. 15th.—4 P.M., Dr. E. Graham Little: Prevention of Accidents. Disorders and Disease in Members of the Medical and Nursing Professions.

THURSDAY.—4 P.M., Dr. C. Killick Millard: Contraception and the Medical Officer of Health.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, Oct. 14th.—4.15 P.M., Mr. C. Roberts: Early Diagnosis of Gastro-intestinal Cancer.

FRIDAY.—4.15 P.M., Dr. R. E. Lane: Diagnosis and Treatment of Plumbism with Special Reference to Recent Work.

ANCOATS HOSPITAL, Manchester.

THURSDAY, Oct. 16th.—11 A.M., Dr. N. Kletz: Clinical Demonstration. 4.15 P.M., Dr. W. J. S. Reid: Disorders of the Autonomic Nervous System.

Vacancies

For further information refer to the advertisement columns.

Aberdeen Royal Hospital for Sick Children.—H.P.

Aberdeen Royal Mental Hospital.—Jun. Asst. Phys. £250.

Bath, Royal Mineral Water Hospital.—Two Hon. Phys.

Battersea Metropolitan Borough.—Part-time Asst. Tub. Officer. £400.

Bedford County Hospital.—H.S. At rate of £175.

Birmingham, Ear and Throat Hospital, Edmund-street.—Res. H.S. At rate of £150.

Birmingham General Hospital.—Res. Anæsthetist. £120. Also Res. H.P. and H.S. Each £70.

Birmingham and Midland Eye Hospital, Church-street.—H.S. £110. Also Asst. S.

Birmingham, Selly Oak Hospital.—Part-time Radiologist. Also Part-time Dental Surgeon.

Bolingbroke Hospital, Wandsworth Common, S.W.—H.S. At rate of £120.

Bradford, Grassington Sanatorium.—H.P. £225.

Brighton, Lady Chichester Hospital for Early Nervous Breakdowns. H.P. Also Jun. H.P. At rate of £100 and £50 respectively.

Brighton, New Sussex Hospital for Women and Children.—H.P. and H.S. Each £50.

Bristol Royal Infirmary, Cancer Research Dept.—Asst. to Pathological Laboratory. £400.

Burnley County Borough.—M.O.H. £1100.

Burnley, Victoria Hospital.—H.P. At rate of £150.

Bury Infirmary, Lancashire.—Third H.S. At rate of £150.

Cairo, Egyptian Government Public Health Department.—Deputy Director. £E. 1140–1390. Also First Bacteriologist £E.960–1200.

Cheadle, Cheshire, Barnes Convalescent Hospital.—Res. M.O. £250.

Chester, Wrenbury Hall Tuberculosis Training Colony.—Res. H.P. £250.

Colchester, Essex County Hospital.—Asst. H.S. and Registrar. £120.

Connaught Hospital, Orford-road, E.—Res. H.S. At rate of £100.

Croydon County Borough.—Asst. M.O., &c. £600.

Derby County Borough.—Asst. School M.O.

Derby, Derbyshire Royal Infirmary.—H.P. £150.

Doncaster Royal Infirmary.—Jun. H.S. At rate of £175.

Dreadnought Hospital, Greenwich.—Asst. Radiologist. 50 gns. Also Physician to Out-patients.

Dumfries, Lochmaben Sanatorium and Infectious Diseases Hospital.—Asst. Med. Supt. £300.

Eastbourne, Princess Alice Memorial Hospital.—H.S. At rate of £150.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—Res. M.O. £200.

Exeter, Royal Devon and Exeter Hospital.—H.S. to Special Depts. At rate of £150.

Gloucester, County and City Mental Hospitals.—Laboratory Asst. £260. Also Jun. Asst. M.O. £350.

Gloucester, Gloucestershire Royal Infirmary and Eye Institution. Res. Surg. O. Also Second H.S. At rate of £175 and £120 respectively.

Godalming, Surrey, King George V. Sanatorium.—Jun. Asst. M.O. £500.

Great Yarmouth General Hospital.—Jun. H.S. At rate of £140.

Hampstead General and North-West London Hospital, Haverstock-hill, N.W.—H.S. At rate of £100.

Hertford County Hospital.—Hon. Anæsthetist.

Infants Hospital, Vincent-square, Westminster.—Clin. Asst. to Out-patient Dept.

Ipswich, East Suffolk and Ipswich Hospital.—Cas. O. £150.

Italian Hospital, Queen-square, W.C.—Hon. Asst. Gynæcologist.

Kidderminster and District General Hospital.—H.S. £150.

Leicester City General Hospital.—Res. M.O. £300.

Liverpool Hahnemann Hospital, Hope-street.—H.S. At rate of £100.

Macclesfield General Infirmary.—Sen. H.S. At rate of £180.

Manchester Royal Infirmary.—Res. Surg. Registrar to Out-patients. At rate of £150. Also Surgical Officer to Out-Patients. £35.

Manchester, St. Mary's Hospitals.—Two H.S.'s. for Whitworth-street West Branch. Also two for Whitworth Park Hospital. Each at rate of £50.

Manchester and Salford Hospital for Skin Diseases.—H.S. At rate of £100.

Metropolitan Ear, Nose, and Throat Hospital, Fitzroy-square, W.—H.S. £150.

Metropolitan Hospital, Kingsland-road, E.—Sen. H.P. and S. Jun. H.P. and S., and Two Cas. O.'s. All at rate of £100. Also a Phys. and Surg.

Middlesbrough County Borough.—Two Asst. M.O.'s. Each £500.

Milford, Surrey, County Sanatorium.—Second Asst. M.O. £400.

Ministry of Health.—Deputy Regional M.O. in connexion with National Health Insurance Medical Service. £800.

Newcastle-upon-Tyne, Hospital for Sick Children.—Jun. H.S. At rate of £100. Res. Sen. H.S. Also Res. H.P. Each at rate of £95.

Newcastle-upon-Tyne, Royal Victoria Infirmary.—Hon. Asst. Surgeon to the Throat and Ear Department.

Newport Mental Hospital, Caerleon, Mon.—Asst. M.O. £400.

Nottingham Children's Hospital.—Res. H.P. At rate of £150.

Oldham Royal Infirmary.—Two H.S.'s. Each at rate of £175.

Portsmouth, Royal Portsmouth Hospital.—3rd H.S. At rate of £130.

Preston County Borough.—Asst. School M.O. £600.

Prince of Wales's General Hospital, Tottenham, N.—Hon. Asst. Surg.

Princess Louise Kensington Hospital for Children, St. Quintin-avenue, North Kensington, W.—H.P. At rate of £75. Also Hon. Asst. Dental S.

Queen's Hospital for Children, Hackney-road, E.—Res. M.O. £200.

Radium Institute, Riding House-street, W.—Clin. Asst. At rate of £300.

Reading, Blagrave Branch Hospital, Calcot.—H.S. At rate of £150.

Richmond, Surrey, &c., Joint Isolation Hospital Committee, Hospital, Mogden.—Res. M.O. £350.

Richmond, Surrey, Royal Hospital.—Sen. H.S. At rate of £150.

Royal National Orthopædic Hospital, 234, Gt. Portland-street, W. Three Surg. Registrars. Each £105.

St. John's Hospital, Lewisham.—H.P., H.S., and Cas. O. Each at rate of £100.

St. Marylebone General Dispensary, 30, Marylebone-lane.—Hon. Phys. in Charge of School-children Consultation Clinic.

St. Olave's Hospital, Lower-road, Rotherhithe, S.E.—Asst. M.O. £400.

St. Pancras Dispensary, 39, Oakley-square, N.W.—Res. M.O. £200.

Salford Royal Hospital.—Res. H.S. to Orthopædic Dept. At rate of £125.

Samaritan Free Hospital for Women, Marylebone-road, N.W.—H.S. At rate of £100.

Sheffield Royal Hospital.—H.S. Also Ophth. H.S. Each at rate of £80.

Shrewsbury, Royal Salop Infirmary.—Res H.P. At rate of £160.

Southampton, Royal South Hants and Southampton Hospital.—Asst. H.S. At rate of £180.

South-Eastern Hospital for Children, Sydenham, S.E.—Asst. Res. M.O. At rate of £100.

Southern Rhodesia Medical Service.—Two Asst. and Relieving Govt. M.O.'s. Each £500.

Staffordshire Mental Hospital, Cheddleton, nr. Leek.—Asst. M.O. £600.

Stockport Infirmary.—H.P. £175.

Stoke-on-Trent, City of.—Tuberculosis Officer. £750.

Sutton, Surrey, Downs Hospital for Children.—Jun. Asst. M.O. £500.

Swansea Hospital.—H.S. to Ear, Nose, Throat, &c. Depts. At rate of £200.

Wallasey, Victoria Central Hospital.—Hon. Gynæcologist.

Walsall, Manor Hospital.—First Asst. Res. M.O. At rate of £200.

West Bromwich and District General Hospital.—H.P. At rate of £200.

West London Hospital, Hammersmith-road, W.—Hon. Ophth. S.

Wolverhampton Royal Hospital.—H.S. At rate of £150.

Woolwich and District War Memorial Hospital, Shooters Hill, S.E.—Res. M.O. £175. Also H.S. At rate of £100.

Workmen's Compensation Act, 1925.—Member of the Medical Board for Silicosis. £750.

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Stonehaven (Kincardineshire).

Births, Marriages, and Deaths

BIRTHS.

ALEXANDER.—On Oct. 2nd, the wife of Major R. H. Alexander, *M.C.*, R.A.M.C., of the British Legation Guard, Peking, N. China, of a son.

BROWN.—On Sept. 29th, at "Moorfield," Lee-on-Solent, the wife of Major P. E. Barry Brown, Army Dental Corps, of a daughter.

MURRAY.—On August 29th, at Cairo, the wife of D. H. Murray, Major, R.A.M.C., of a daughter.

STEWART.—On Sept. 26th, at Green Mount, Batley, Yorkshire, the wife of Dr. Alan Stewart, of a daughter.

WILKINSON.—On Sept. 26th, at Wilbraham-place, the wife of Dr. M. C. Wilkinson, of a son.

MARRIAGES.

KENNEDY—CHILLCOTT.—On Oct. 4th, at Holy Trinity, Brompton, Lt.-Col. Robert S. Kennedy, D.S.O., *M.C.* (late I.M.S.), to Daphne Evelyn, only daughter of Mr. and Mrs. R. H. Chillcott, of "Huntspill," Weybridge.

MARTIN-LEAKE—CARROLL.—On Oct 1st, at Christ Church, Westminster, Lieut.-Colonel Arthur Martin-Leake, V.C., F.R.C.S., late R.A.M.C., Chief Medical Officer of the Bengal-Nagpur Railway, to Winifred Frances, widow of C. W. A. Carroll, Agent of the Bengal-Nagpur Railway.

MURPHY—AUSTIN.—On Sept. 30th, in London, Douglas Power Murphy, M.D., Philadelphia, to Grace Lily Austin, M.D.

DEATHS.

MANNING.—On Oct. 3rd, suddenly, at Middleton, Combe Martin, Nathaniel Samuel Manning, O.B.E., T.D., F.R.C.S.I.

WILLEY.—On Oct. 1st, at Farringford, Queen's Park West-drive, Bournemouth, Thomas Willey, M.D., aged 84.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

HEALTH OF THE ROYAL AIR FORCE.

THE report[1] on the health of the Royal Air Force during the year 1929 is signed by Air-Commodore J. McIntyre, director of medical services, and contains within its 64 pages an immense amount of exact information on the causes of sickness, death, and invaliding in the service, on the physical efficiency of officers, and on the medical examination of candidates for commissions.

Incidence of Sickness.

In the force as a whole, the total sickness incidence rose from 701·4 per 1000 in 1928 to 737·2 per 1000 in 1929, but the latter figure compares favourably with average incidences of 808·5 and 1119·4 respectively for the earlier four-year periods of 1925–28 and 1921–24. This increase in incidence was due to the home figures, for which a rise in the number of cases of influenza (1302 in 1929 compared with 292 in 1928) was mainly responsible. There was, however, a slight reduction in the average number of days' sickness per head of the force. The invaliding-rate from abroad rose to 18·4 in 1929 from 17·0 per 1000 in 1928, the rise being largely due to cases of the enteric group invalided from Iraq; the corresponding average figures for the earlier periods were 21·8 and 22·4 respectively. The final invaliding-rate rose from 6·2 per 1000 in 1928 to 7·6 per 1000 in 1929. Psychoneurosis and tuberculosis again headed the list of causes of final invalidings, the former showing a decrease and the latter an increase in actual numbers compared with 1928. The death-rate fell from 4·5 in 1928 and an average of 4·4 in each of the two earlier periods to 3·4 in 1929.

There were fewer deaths from flying accidents during 1929 than in any one year since 1921, and more aircraft hours were flown per accident resulting in death or injury than in any previous year; 28 per cent. of all flying casualties resulted in death compared with 41 per cent. in 1928 and 39 per cent. in 1927. There was a decrease in motor and workshop accidents in 1929 but a slight rise in injuries sustained in athletics; 60 per cent. of all accidents occurred on duty.

ANALYSIS BY AGE AND TRADE.

The tendency appears to be for sickness, whether disease or injury, to decrease in the higher age-groups. Among the various types of unit the incidence of sickness is lowest among flying units, while on analysis by trades the group of aircraft apprentices, which is the lowest age-group, shows the highest incidence. A point worthy of notice in this latter analysis is that in the only named group of diseases where the disability is the result of voluntary risk—viz., venereal disease—the same groups (excluding aircraft apprentices under 18) i.e., drivers, and officers, cadets, and airman pilots, have shown the highest and lowest incidences respectively for the last five years, with the exception of 1926 when the highest group—drivers—dropped to second place; and there has been a remarkable constancy in the placing of the remaining groups during the whole of the period. There were 29 cases of pulmonary tuberculosis in 1929 compared with 24 in 1928; 25 of these cases gave a definite family history of phthisis, and 23 had personal histories of such likely precursors as chronic cough, upper air passage infections, pleurisy, and pneumonia. Four out of 14 cases who had served abroad had suffered from tropical diseases; and as regards their service occupations, two were in motor-boat crews, where they were liable to repeated wettings, two worked in blacksmiths' shops, and one had been employed for ten years in photographic dark rooms. The latter case was of further interest in that two of his immediate predecessors had developed phthisis and a pupil working contemporaneously with him was also invalided from the service with the same disability.

VARIOUS DISEASES.

The incidence of venereal disease has fallen in 1929 to 15 per 1000—a very satisfactory figure, continuing a steady tendency to a decrease which has been maintained since 1921. The incidence of total sickness at home—i.e., cases admitted to hospital and cases of less than 48 hours' duration—fell to 626·1 in 1929 from averages of 634·6 and 857·5 per 1000 respectively during the two earlier periods. There was an increase, however, in the number of cases admitted to hospital, giving an incidence of 411·7 per 1000 compared with previous averages of 364·1 and 378·6, and this rise was mainly due, as has already been noted, to an increase in the admission rates for influenza and tonsillitis—57·4 and 42·0 per 1000 respectively in 1929 compared with 13·1 and 26·6 in 1928.

In the age-groups at home, infections of the upper air passages and digestive troubles continue to pick out the youngest age-group (under 18). Acute rheumatism among boys at Halton showed a slight increase compared with 1928, the figures being 46 and 34 respectively. In 1929 five cases developed definite cardiac lesions, while in a further five there was evidence of a temporary cardiac involvement. The corresponding figures in 1928 were 3 and 12.

Abroad, both the admission to hospital rate and the total incidence of medical non-effectiveness fell in 1929, the respective incidences being 604·0 and 1042·6 in 1929 compared with 640·0 and 1161·8 in 1928. The incidence of dysentery showed a satisfactory decrease in all commands, and that of primary malaria a decrease during the last five years in Iraq and the Mediterranean Littoral, which comprises Malta, Egypt, Palestine and drafts en route to and from the United Kingdom, and a steady figure throughout in India. A similar number (48) of cases of the enteric group of diseases was notified in 1929 to that in 1928, and there were four deaths—three from typhoid fever and one from clinical enteric. There were six cases of sickness due to the effects of heat compared with 27 in 1928 and no deaths. Ten cases were invalided home from abroad for psychoneurosis compared with 17 in 1928 and 30 in 1927.

Selection of Candidates.

At the Central Medical Establishment 58 per cent. of candidates for commissions were accepted, compared with 64 per cent. in 1928, and among the rejected defective vision was the most frequent cause of rejection, while an analysis of the physical efficiency tests which these candidates undergo was made by ages, and the figures bear out the practical experience that physical efficiency does not vary much between the ages of 16 and 28.

In investigating the effects of high-speed flying, the results obtained showed that no special methods beyond the ordinary routine examination were required in the selection of suitable pilots. The chief effect of steep banking at high speed, known as blacking-out, appears to be due to the withdrawal of blood from the eye itself, and while not incapacitating the pilot to a degree where he cannot manage his machine, should be regarded as a warning not to increase these effects by turning further.

Considerable use has been made of the electrocardiograph and orthodiagraph in assessing cardiovascular efficiency, and data is being steadily accumulated showing the nature of the variations of the normal electrocardiogram and the relative size of the heart associated with physical efficiency.

Of the officers of the general duties branch and airman pilots who are liable for full flying duties, 89 per cent. were found fit for full duties at their annual examination, and of 341 officers who on account of their rank and age are not liable to full flying duties,

[1] H.M. Stationery Office. 1*s.* 3*d.*

151 were, nevertheless, found medically fit for full duties at home or abroad. On the whole, officer pilots show a slightly better figure in their physical efficiency tests than the airman pilots.

In the recruiting of airmen, 40 per cent. of candidates were accepted as of the required medical standard, compared with 53 per cent. in 1928, and as in previous years loss or decay of many teeth was the most frequent cause of rejection.

In the reserve of officers, 68 per cent. of candidates for this service were accepted in 1929, and the standard of physical fitness of those serving, estimated by the same standards as obtain for the regular officer, was found to be good, 78 per cent. of those examined being considered average or above.

Transport of casualties to hospital by air continue in those countries such as Iraq and Palestine where this method, by reason of local conditions, is frequently the only one possible, and during the year 65 patients were evacuated by this means.

INSTRUCTION ABOUT DIET.

To the Editor of THE LANCET.

SIR,—While gratefully acknowledging the appreciative reference in your annotation (1930, i., 1358) to the paper read at this year's Conference of Educational Associations and now issued as a pamphlet entitled "Children's Diet," there are points which it seems desirable to clear up. The condemnation was not of milk but of milk puddings. The remarks as to meat were applied to children of tender years. Prof. Langmead has drawn attention to the irritating effect of the cellulose in bananas upon the digestive organs of children.

I am, Sir, yours faithfully,

CHAS. E. HECHT,
Hon. Sec., Food Education Society.

Gordon-square, W.

CHARTERED SOCIETY OF MASSAGE AND MEDICAL GYMNASTICS.

THAT this society should choose Manchester as the place of its second annual dinner was a well-deserved compliment to the city. At the time when the Society of Trained Masseuses was holding examinations with a view to raising the standard of education amongst those practising massage in London, the Institute of Remedial Gymnastics was doing the same good work in Manchester. It became obvious that these two institutions should not be competing one against the other, so they combined to form the Chartered Society of Massage and Medical Gymnastics, and Miss Sparsholt, who was largely responsible for the Manchester Institute, became a member of the Council of the newly formed society, which now has 7800 members.

The dinner was held at the Midland Hotel, and the guests were received by Mr. R. C. Elmslie. The toast of "The Society" was proposed by Dr. John Coward, who said he had come into contact with its work during the war, when a corps was formed for treatment by massage and medical gymnastics. This corps had adopted as a badge a wheel with wings attached, all of which suggested progress, and though it had been terribly overworked, it had done its work willingly and well. It was of inestimable value to the profession to be able to secure the services of well-qualified practitioners in massage and medical gymnastics, who only worked under doctors' orders. In responding, Mr. Elmslie, who congratulated Miss Sparsholt (who was present), thanked the lecturers, the hospitals, and the medical school of Manchester for the help they had given to make the gathering successful. He illustrated the importance of thorough training in the physical treatment of disease by telling how members of the resident staff of his own hospital had given themselves severe dermatitis by playing with ultra-violet rays. Though the society had gone ahead at a great pace, much still remained to be done. D J. B. Mennell, proposing "The Guests," promise to be short, and quoted an eminent divine who wa asked how long a sermon should be, and answere "No soul was ever saved after 20 minutes, and man souls have been lost after ten." Prof. E. D. Telfor replying, spoke of the society's good work, and hope that its members would educate the medical profe sion to appreciate the help they were able to give.

A DENTAL APPOINTMENT BOOK.

THE Dental Manufacturing Company, Ltd. (Broc House, Great Portland-street, London, W.1.), ha sent us a copy of a diary of appointments for 193 which is described, with some justice, as an aristocra among diaries. Besides ample space for enterin appointments throughout the year, it contains list of the fees and regulations for dental benef under National Insurance, details of the Publ Dental Service Association of Great Britain, and number of useful tables. Bound in imitation morocc with rounded corners, pencil and address bool the price is 6*s.* 6*d.* It can be obtained direct through any dealer.

ROYAL MEDICAL BENEVOLENT FUND.

AT a recent meeting of the committee 36 grants were ma amounting to £655. The following are particulars of few cases helped.

M.B., aged 36, with three children aged 5, 3, and 1. Applica is a general practitioner who put up his plate some 18 mont ago, and two months ago developed rheumatic fever. He now in hospital. He has no reserves and is therefore falli into debt, having his wife and family to maintain and a locu tenent to pay. Voted £20. Further help is being sought fr another charity. The case will be reconsidered in three mont time.

Daughter, aged 46, of M.B. Her father, who died at the a of 80 this year, worked hard in a poor-class practice for ov 50 years. For about four or five years before his death was an invalid, and for over a year was bedridden. Since h death the applicant has had practically no money at all. Vot £20. It is hoped that she will soon be able to find employme for which she is trained.

Daughter, aged 65, of M.D. At the death of her father 1894 she was left unprovided for and untrained. She becam a housekeeper at a girls' school. A supporter of the case writ that "she lived for the school. Last time I saw her she w looking very frail and was still everyone's slave. I cann conceive of anyone more deserving and probably more needi help in her later years now that she has broken down in heal and is unable to work." Present income £52 a year. Vot £26.

Widow, aged 62, of M.R.C.S. Husband was in receipt of a annuity from the Fund because he had broken down in health he also had a pension of £51 a year. On his death both annui and pension ceased. The widow's sole support is her daught who is earning 52*s.* a week. Voted £26. Help will be soug from other charities.

Widow, aged 70, of M.B. Since the death of her husband 1897 she has worked as a nurse companion. She is not fit do much now except look after herself. Present income £ Voted £26.

Subscriptions and donations should be forwarded to th hon. treasurer of the Fund at 11, Chandos-street, Cavendis square, London, W. 1.

Appointments

FLEMING, G. B., M.D., B.Chir. Camb., has been appointed the Samson Gemmell Chair of Medical Pædiatrics in co nexion with the Royal Hospital for Sick Children, Glasgo

FLEMING, G. W., L.R.C.P., L.R.C.S. Ed., D.P.H., Medic Officer of Health and School Medical Officer for Gospo

FRASER, A., M.D., Ch.B. Glasg., D.P.H., Medical Officer Health for the Stewartry of Kircudbright.

GOUGH, W., M.B., B.S. Lond., F.R.C.S. Eng., Honorary Gynæc logist, Leeds General Infirmary.

MACKENZIE, M.B., Ch.B. Aberd., Medical Officer of Wal Zetland.

Edinburgh Royal Maternity and Simpson Memorial Hospita YOUNG, J., M.D., F.R.C.S. Ed., and MILLER, D., M.I F.R.C.S. Ed., Physicians; HAULTAIN, W. E. T., M.B B.Chir. Camb., F.R.C.S. Ed., and KENNEDY, C. D., M.B Ch.B. Ed., F.R.C.S. Ed., Asst. Physicians; MCLARE M. B., M.B., Ch.B. Ed., Senr. Lady Resident, and JAMIESO E., M.B., Ch.B. Glasg., Junior Lady Resident.

Certifying Surgeons under the Factory and Workshop Act HABGOOD, G., M.B., B.Chir. Camb. (Totton, County Southampton); KELLY, W., M.B., Ch.B. Aberd. (Basin stoke).

ADDRESSES AND ORIGINAL ARTICLES

THE TRANSMISSION OF YELLOW FEVER.*

BY EDWARD HINDLE, SC.D.,
THE BEIT RESEARCH FELLOW IN TROPICAL MEDICINE.
(*From the Wellcome Bureau of Scientific Research.*)

THE mode of transmission in yellow fever is generally considered to have been settled by the work of the famous American Yellow Fever Commission in 1900. (See Senate Documents, 1911.) Practical methods of combating the disease, based on these results, have succeeded to a degree almost unparalleled in the case of any other disease, but although the main conclusions of the Commission, to the effect that yellow fever is transmitted only by the bites of *Stegomyia fasciata* (*Aëdes ægypti*), would seem to have been justified in the light of subsequent practical experience, recent investigations have shown that this generalisation requires some modification.

It should be noted that before 1927 all work on yellow fever necessitated the use of human volunteers, and consequently the number of actual transmission experiments is comparatively few. The discovery by Stokes, Bauer and Hudson (1928) that *Macacus rhesus* is susceptible to the infection, has opened the possibility of studying the transmission problem in much greater detail, and as some of these results are at variance with generally accepted views on the subject it seems desirable to re-examine the evidence on which these are based, and also to incorporate recent work, including the results of my own experiments on the subject.

These experiments have been carried out during the past two and a half years at the Wellcome Bureau of Scientific Research, and I should like to take the opportunity of expressing my great indebtedness to Dr. Wenyon and the staff of the Wellcome Foundation for their kind assistance during the course of these investigations. In particular, I should like to mention the very great help I have received from Dr. B. Tazelaar, to whom I am indebted for continual assistance during the whole of this period.

The Virus.

Four strains of yellow fever virus have been studied, three African and one Brazilian, and no marked difference could be found between any of these strains. Vaccination or other methods of immunisation against one strain protected indiscriminately against the other strains, and my results fully support the now generally accepted view as to the identity of the African and American strains of yellow fever. With regard to the behaviour of these strains in monkeys, one of the African strains from Senegal, the first to be established in any laboratories outside endemic regions (Sellards and Hindle, 1928), has shown alterations in its virulence which will be referred to elsewhere. Apart from the results obtained with this modified virus, all the strains have shown a very high degree of virulence in monkeys, the mortality exceeding 95 per cent. in a long series of experiments. In addition to the French strain, experiments have been made with the Asibi strain, from Nigeria, obtained through the kindness of Dr. H. A. Sawyer; a Berlin strain originally from Africa, and a Brazilian strain from Rio de Janeiro, the two last kindly supplied by Prof. M. H. Kuczynski.

*Communicated this week to the Permanent Committee of the Office International d'Hygiène Publique, now in session.

COURSE OF INFECTION IN MONKEYS.

The course of yellow fever in *M. rhesus*, whether the disease has been induced by the inoculation of infected material or by the bites of infected mosquitoes, is very constant in its general features, though individual differences may be observed. After an incubation period of two to five days without any prodromal symptoms the temperature suddenly rises 2–3° F. above the normal of the individual, and after 24 to 48 hours the temperature suddenly falls to subnormal, and the monkey generally succumbs within a few hours of this terminal crisis. Occasionally there is a second rise of temperature producing the saddle-back type of temperature chart commonly seen in human cases. It will be noticed that the course of the disease is much more rapid in monkeys than in man, and this difference should be remembered in comparing the two. Human cases of the disease very rarely succumb before the fourth or fifth day of fever, the majority of deaths occurring about the sixth or seventh day, whereas monkeys usually die within two or three days of onset of fever.

Possibly as a result of the longer interval there is a marked difference in the infectivity of the tissues of monkeys and human beings dead of yellow fever. In monkeys the virus often persists in the body until the death of the animal but in man the virus generally disappears before death, or its presence is concealed by the development of immune bodies. A practical result of this difference is that human post-mortem examinations are attended with very little danger of infection, whilst monkeys usually contain the active virus at death, and judging by the number of laboratory infections, in which other sources of infection were excluded, it would seem that especial precautions are necessary in examining these animals.

Kuczynski and Hohenadel (1929) were the first to show that yellow fever virus is present in the blood of monkeys within a few minutes of their inoculation. According to these authors, the virus lives in the blood, at least in the earlier stages of the disease, and consequently may be recovered from the circulation throughout the whole of the incubation period. In one instance they recovered the virus from the blood of a monkey within eight minutes after the inoculation, and in other cases from 4 to 18 hours later. Hudson and Philip (1929) independently confirmed and extended these observations, and showed that the blood of yellow fever monkeys may become infective to mosquitoes within 12 hours after inoculation, and remains infective throughout the incubation period, and at least during the febrile period and for one day afterwards. These authors' experiments, conducted in detail on five rhesus monkeys, are of very great interest, for not only were many batches of mosquitoes fed on the animals on each successive day after being inoculated, but also at the same time samples of blood were taken and inoculated into normal monkeys. Their results clearly indicate that in monkeys the blood usually ceases to be infective to mosquitoes within 24 hours of the first drop in temperature. It should be noted that two of these monkeys showed the saddle-back type of temperature chart often seen in human cases.

The results of these and other experiments, which will be referred to below, indicate that in monkeys the blood commonly ceases to be infective to mosquitoes one to three days after the onset of fever, although the virus may still be present in the blood,

its presence being masked by the development of immune bodies.

Course of Infection in Man.

The members of the American Commission in Cuba (1900) were the first to investigate the infectivity of the blood to mosquitoes, and showed that the blood was infective during the first three days of fever. Marchoux and Simond (1906) also found that the disease could be transmitted by the bites of mosquitoes fed on patients during the first three days of the disease, but failed to produce infection with the bites of mosquitoes fed during the incubation period of the disease. As a result of these few observations it is dogmatically asserted in most of the current text-books that the blood of yellow fever patients is infective *only* during the first three days of fever, and most quarantine regulations have been based on this assumption, but it must be admitted both from experiments on monkeys and on theoretical grounds that it is highly probable that the blood of human yellow fever patients is infective to mosquitoes also during the incubation period, though doubtless the concentration of virus increases with progression of the disease.

Recent work in the main supports the generally accepted view that the blood ceases to be infective after three to four days, and in many instances earlier. Thus Aragão (1928) tested the blood of 21 yellow fever patients during the 1928 epidemic in Rio de Janeiro. Five of these patients had been ill for more than 72 hours, and in every case their blood failed to infect monkeys. The remaining 16 gave varying results, some producing infection and others not. Parts of the liver, spleen, or kidney of seven patients who died on the fourth and fifth days of illness also failed to produce infection when inoculated into monkeys. Sellards and Mathis (1928) obtained similar results in Dakar during the 1927 epidemic, for blood collected from yellow fever patients on third to seventh days and all post-mortem material failed to produce infection in monkeys.

Although these results indicate that as a general rule the blood ceases to be infective soon after the onset of fever, it is clear that occasionally it produces infection later. Thus the blood of a patient in West Africa was infective up to 84 hours after the beginning of fever, though after the first day mosquitoes fed on this case failed to become infected. (See Sellards and Mathis, 1928.) Kuczynski and Hohenadel (1930) obtained infection with the washed leucocytes from a mild case of yellow fever on the eighth day of the disease, four days after the fever had disappeared, but in this case the whole blood failed to produce infection. The following two records of recent laboratory infections with a Brazilian strain of yellow fever, that had been maintained in monkeys and mosquitoes for approximately one year, also show that the virus may persist in the blood for at least four days after the beginning of fever.

CASE 1.—Laboratory attendant, presumably infected by skin contamination with the blood of a rhesus monkey infected with a Brazilian strain of yellow fever. The patient had a severe attack of the disease and showed all the characteristic symptoms including intense jaundice and albuminuria, black vomit, and hæmorrhages in various parts of the body. Four c.cm. of citrated blood collected on the fourth day of fever were inoculated intraperitoneally into a rhesus monkey, which showed a rise in temperature five days later, and died on the sixth day with typical signs of yellow fever, confirmed both by post-mortem and histological examination.

CASE 2.†—A hospital attendant whose only possible exposure to infection was whilst doing laboratory blood tests on a yellow fever patient. Ten days after having examined this infected blood the patient became ill, and on the third day of fever was given an injection of 30 c.cm. of immune serum. In the afternoon of the fourth day of fever 1 c.cm. of his blood was drawn off and inoculated intraperitoneally into a rhesus monkey, which showed a rise in temperature four days later and collapsed the following day. Post-mortem examination showed the typical appearances of yellow fever, confirmed by the histological changes in the liver.

† A full account of this and other cases will be published by Dr. G. C. Low and Dr. N. Hamilton Fairley, to whom I am much indebted for some of these details.

The second case presents many points of interest, such as the method of infection, showing that the blood of human yellow fever patients is highly infectious; the rather long incubation period of 10 days; and, finally, the infectivity of the blood on the fourth day of fever, even after a large injection of immune serum. This patient recovered after a mild attack of the disease.

Occasionally the virus has been recovered from human tissues post mortem. Davis and Burke (1929) infected a monkey by the inoculation of kidney tissue taken at the autopsy of a yellow fever patient who died three and a half days after the beginning of fever. The strain obtained, however, was non-virulent and produced very mild infections in monkeys.

Summarising the results of recent observations on the infectivity of the blood during the course of yellow fever, it is evident that the blood must be infective to mosquitoes during the incubation period of the disease. After febrile symptoms have appeared the blood usually ceases to be infective within three days, although exceptionally the infection may persist until the fourth day. As a result of this early disappearance of infectivity there is little danger of acquiring the infection when performing autopsies on human yellow fever cases, though in monkeys which generally succumb within two or three days of the onset of fever, the blood and organs are usually infective at death.

Methods of Infection other than by Mosquitoes.

Since 1928 yellow fever has been studied in various European and American laboratories in non-endemic regions where the possibility of natural transmission has been eliminated, yet cases of human infection have occurred in all except one of these laboratories. It may be argued that the virus in monkeys is different in its behaviour from that in man, but the history of the disease in the two hosts does not support this view. Moreover, the records of laboratory infections acquired from virus that had been passaged through monkeys for periods varying from 1 to 2 years show that such cases have presented every type of the disease, from very mild cases impossible to diagnose clinically and only recognised by the inoculation of their blood into monkeys, up to very severe cases with the typical symptoms of albuminuria, jaundice, hæmorrhages, black vomit, and the combination of a falling pulse-rate with a rising temperature (Faget's sign).

In most cases it has been impossible to decide exactly how the infection was acquired, but there seems little doubt that contamination with infected blood has been the usual method, and this is the only factor common to all the cases. The record of some recent cases of the disease shows that not only is the blood of monkeys capable of producing infection in this way, but also that of human patients. One of these (Case 2) has already been referred to. Another patient merely did a blood count on Case 2, and in turn became infected after an incubation period of ten days. Both these patients could have acquired the infection in no other way than by contamination of the skin whilst handling infected blood. They had

never had any possibility of coming in contact with infected monkeys or mosquitoes.

Although there are no experiments on the passage of the virus through the human skin, Bauer and Hudson (1928, *b*) have shown that in the case of monkeys infection may be produced by merely rubbing infected blood on the intact and unshaven skin. According to these authors the danger of infection through the skin seems to depend largely on the amount of virus present in the infectious material. Moreover, Aragão (1929, *a*) produced yellow fever in monkeys by depositing on the intact skin the fæces of infected mosquitoes. The skin of the monkey was carefully examined with a binocular microscope before applying the virus in order to be certain that no injuries were present.

Consequently, it is necessary to reconsider the general opinion regarding the impossibility of acquiring the infection in the absence of the mosquito. Until recently all work on yellow fever has been conducted in endemic areas, and any infections have been attributed to the bites of mosquitoes or, in the case of laboratory infections, to the abnormal infectivity of monkey tissues. The cases mentioned above clearly indicate that the blood of yellow fever patients may be directly infectious to other individuals, and in view of the common occurrence of hæmorrhages during the course of the disease it seems possible that yellow fever may be spread by these means. The danger is probably not very considerable, as the blood often ceases to be infective before such clinical symptoms as hæmorrhages have appeared, but there would be a possibility of hospital staff and attendants acquiring the disease in the handling of such patients in the early stages of the disease, and especially during any blood examinations.

Transmission by Mosquitoes.

It is well known that the natural method of transmission is by the bites of infected mosquitoes, and until recently *Aëdes ægypti* (=*Stegomyia fasciata*) was supposed to be the only carrier. Doubtless this is the main carrier, but recent work with monkeys seems to indicate that other species may transmit the infection, at any rate under experimental conditions. The following is a list of the species that have been incriminated, together with the evidence on which it is based :—

Species.	Evidence.	Locality.	Authority.
Aëdes ægypti	T. M.	W. Indies, S. America, W. Africa.	Various Yellow Fever Commissions from 1900 onwards.
,, *luteocephalus* ..	I.T.My.	W. Africa.	Bauer (1928).
Aëdes (Aëdimorphus) stokesi (=*apicoannulatus*)	,,	,,	,,
Aëdes chrysogaster ..	,,	,,	,,
,, *vittatus*	,,	,,	Philip (1929).
,, *africanus* ..	,,	,,	,,
,, *simpsoni*	,,	,,	,,
Aëdes (Ochlerotatus) scapularis	,,	Brazil.	Davis and Shannon (1929).
Aëdes albopictus ..	,,	In lab., Amsterdam.	Dinger and colleagues (1929).
,, *scutellaris* ..	,,	,,	See de Vogel (1930).
Eretmopodites chrysogaster	,,	W. Africa.	Bauer (1928).
Tæniorhynchus (Mansonioides) africanus ..	,,	,,	Philip (1930).
Cimex lectularius ..	F.I.	Brazil.	Monteiro (1929).

T.M. = Transmission from man to man, man to monkey, and monkey to monkey.
I.T.My. = Indirect transmission from monkey to monkey.
F.I. = Fæces infective.

In addition to these experiments in which the mosquitoes transmitted the infection by their bite, the virus has been found to survive for varying periods in the gut of other species. Thus the gut of *Aëdes (Ochlerotatus) serratus* and *Aëdes (Tæniorhynchus) tæniorhynchus* that had been fed on a yellow fever monkey one month previously produced infection when inoculated into normal monkeys (Davis and Shannon, 1929). Also the virus was found to survive in *Anopheles gambiæ* for a maximum period of four days before dying out (Philip, 1930).

It is difficult to decide whether these various species transmit yellow fever in nature. Those in which the bite of the mosquito is not infective may be excluded from consideration, for they could only produce infection under very exceptional conditions. With regard to *Aëdes scapularis*, Marchoux and Simond (1906) carried out one transmission experiment on a human volunteer, but without success. In an infection like yellow fever, however, in which the blood sometimes loses its infectivity at a very early stage of the disease, any positive result is of much greater significance than a negative one. Judging from the analogy of dengue fever, which seems to be closely related to yellow fever, there seems no doubt that the disease is spread by other species of *Aëdes* in addition to *A. ægypti*, and experimentally *A. albopictus* has been shown to be an effective carrier of dengue (Simmons, St. John, and Reynolds, 1930). Consequently, it is reasonable to suppose that in the case of yellow fever other species of aëdes should be regarded with suspicion, and the experiments recorded above indicate that this supposition is well founded.

The success of antimosquito campaigns directed primarily against *A. ægypti* has led to the general belief that this is the only mosquito concerned in its transmission, but it should be remembered that in such campaigns all mosquitoes breeding in the neighbourhood of human habitations are destroyed indiscriminately. As a general rule *A. ægypti* largely outnumbers other species in yellow fever districts, and therefore with justice may be referred to as the yellow fever mosquito ; but especially in the endemic regions of West Africa it seems highly probable that allied species may play a not inconsiderable part in the spread and maintenance of the disease.

INCUBATION PERIOD IN THE MOSQUITO.

The American Commission to Cuba in 1900, in establishing the mosquito transmission of yellow fever, also found that after feeding on an infected patient, a period of about 12 days was required before the mosquito was capable of inducing the infection in normal individuals by its bite. This so-called extrinsic incubation period of 12 days has been generally accepted as the minimum incubation period, but recent experiments have shown that it is sometimes shorter. Bauer and Hudson (1928, *a*), in one instance, found that mosquitoes kept at a temperature varying between 74° and 90° F. became infective on the ninth day after having been fed on an infected monkey.

I have used two strains of *A. ægypti*, one African and the other Indian, and at a constant temperature of 28° C. (82° F.) have also obtained infection with the bites of mosquitoes after an incubation period of nine days, as, for example, in the following experiment.

Expt. 120 (Nov. 9th, 1928).—A large rhesus monkey (120) was bitten by approximately 32 West African mosquitoes that had fed nine days previously on an infected monkey on the first day of fever. The insects were kept at 28° C. After three days' incubation period monkey 120 showed a rise in temperature and died of yellow fever two days later.

On the other hand, the incubation period may be very much prolonged under certain ill-defined

conditions, for Dinger, Schüffner, Snijders, and Swellengrebel (1930) working with *A. ægypti* from Togoland and a French strain of yellow fever, in the case of one batch of mosquitoes failed to produce infection after an incubation of 22 days, although 15 days later this same batch had become infective.

Mosquitoes that have ingested infective blood do not invariably become capable of producing the infection by their bite, even when the virus can be shown to be present in their bodies.

Expt. I.M.F.—On Oct. 19th, 1928, five Indian *A. ægypti* were fed on infected monkey 112, and on the 20th and 22nd re-fed on infected monkey 116. The mosquitoes were kept at 28° C. On Nov. 1st all fed on a normal monkey 108, which died of typical yellow fever after five days. On the 6th, four of these mosquitoes remained alive and were fed on normal monkey 118 which remained uninfected. Fourteen days later this monkey 118 was bitten by a single infected mosquito of another batch and died of yellow fever five days later. On the 27th, two fed on normal monkey 124 which remained uninfected. This animal was tested for immunity 41 days later by the inoculation of 0·0001 g. infected liver and died of yellow fever six days later. On Dec. 7th two mosquitoes remaining alive were killed and their bodies inoculated subcutaneously into monkey 137, which died of typical yellow fever seven days later.

This experiment shows that in some mosquitoes the bite may not produce infection even though the virus survives in the body, and it is conceivable that such individuals might become infective after an abnormally long incubation period. Also, unless it is assumed that the mosquito which died between Nov. 1st and 6th was the only one responsible for the infection of monkey 108, there is an indication that some mosquitoes may lose their infectivity by feeding.

INFLUENCE OF TEMPERATURE ON INFECTIVITY OF MOSQUITO.

It has been generally assumed on the basis of an experiment recorded by Marchoux and Simond (1906) that mosquitoes are unable to transmit the infection or become infected at temperatures below 20° C., and at 22° C. the incubation period is prolonged up to three weeks. The results of the following experiments with mosquitoes kept at room temperatures varying from 50° to 65° F. (10°–18° C.) indicate that infection may occur at lower temperatures.

Batch 6.—On March 15th, 1929, a number of West African mosquitoes fed well on infected monkey 176 on the first day of fever and were kept at room temperature (10° to 15° C.). On April 24th, five of these mosquitoes fed on a normal monkey 201. This monkey's temperature showed no significant rise, but when tested by the inoculation of virus on May 19th and June 13th respectively it showed no reaction, so was either a naturally resistant individual or had suffered from a non-apparent attack which conferred immunity.

Batch 17.—On June 15th, 1929, 10 West African mosquitoes fed well on infected monkey 212 on the second day of fever, and were kept at room temperature, approximately 15° to 18° C. On July 5th four mosquitoes bit normal monkey 218 which showed a rise in temperature of 3° on the fifth and sixth days, which presumably indicated a mild attack of yellow fever, as two subsequent inoculations of large doses of virus produced no reaction. On Oct. 11th, 118 days after the original infected meal, four of these mosquitoes bit monkey 247, which showed a rise in temperature four days later and died of typical yellow fever on the seventh day, the diagnosis being confirmed by histological examination.

Batch 43a.—On March 14th, 1930, five mosquitoes fed well on monkey 313 infected with a Brazilian strain of yellow fever on the first day of fever. The insects were kept at room temperature which averaged 10° to 15° C. On the 28th, three mosquitoes, all remaining alive, fed on a normal monkey 334 without any result, and this animal died of typical yellow fever when inoculated with infected blood six weeks later. On April 4th, two mosquitoes fed on a normal monkey 343 which was either immunised or naturally resistant, as no obvious reaction followed the bites of the mosquitoes and three subsequent inoculations of virus had no effect. On the 8th, the mosquitoes were placed in the incubator at 28°C. and subsequently kept at this temperature. On the 15th, after being kept at 28° C. for seven days, the mosquitoes fed on monkey 344, which died six days later but without any definite signs of yellow fever. On May 9th one mosquito fed on monkey 351, which died of yellow fever four days later.

The results of these experiments indicate that the virus may persist in mosquitoes, kept at low temperatures immediately after feeding, without their bite becoming infective. Subsequent exposure to a temperature of 28° C. causes the bite of such insects to become infective. By these means the incubation period of the disease in the mosquito might be prolonged indefinitely. In some instances, however, the virus dies out in the body of the mosquito, as indicated in the following experiment.

Batch 40.—On Jan. 14th, 1930, six *A. ægypti* fed well on infected monkey 302 on the first day of fever and were kept at room temperature which never exceeded 15° C. and averaged about 12° C. On Feb. 20th four mosquitoes fed well on normal monkey 310 which remained uninfected and when subsequently inoculated with infected blood died of yellow fever seven days later. On March 6th and 11th the remaining mosquitoes were ground up in saline and inoculated intraperitoneally into normal monkey 311 which remained uninfected. Six weeks later this monkey was inoculated with infected blood and died of yellow fever after four days.

The following experiment is of importance from a practical point of view, because it shows that once a mosquito has become infective by its bite, this infectivity is retained even after subsequent exposure to low temperature.

Batch 33.—On Nov. 15th, 1929, ten *A. ægypti* fed well on infected monkey 271 on the first day of fever. After being kept at 28° C. for 12 days the mosquitoes were kept subsequently at room temperature which varied between 10° and 15° C. On Jan. 3rd, 1930, two fed well on normal monkey 298, which died of yellow fever seven days later.

It should be noted that in all the experiments recorded above the mosquitoes were fed at 28° C., as at low temperatures it is difficult to get them to feed. The results with Batch 17 indicate that mosquitoes may become infective at temperatures below 20° C., and the restriction of endemic yellow fever to tropical regions is probably due to the developmental requirements of the mosquito rather than those of the virus which it carries. The survival of the virus in mosquitoes kept at low temperatures agrees with the results obtained by Blanc and Caminopetros (1929) in the case of dengue fever.

HEREDITARY INFECTION IN THE MOSQUITO.

The results of recent experiments seem to leave no doubt that hereditary infection in the mosquito rarely, if ever, occurs. Marchoux and Simond (1905) record having produced infection in a human subject by the bite of a single mosquito that hatched from eggs laid by an infected parent. This mosquito was 22 days old when it produced infection and eight days previously had been fed on the same patient without producing any infection. It is difficult to explain the positive result of these distinguished investigators in the light of subsequent observations. Rosenau and Goldberger (1906) in 38 experiments failed to obtain such a result, and all recent attempts using infected monkeys have also given negative results.

In view of the extraordinary penetrating power shown by the virus, as evidenced by percutaneous infection, &c., it is obviously capable of reaching all parts of the body of an infected mosquito, and experiments suggest that the ovaries of these insects contain the virus (Davis and Shannon, 1930), although in these experiments the possibility of contamination by the infected cœlomic fluid bathing the ovaries does not seem to have been excluded. If the ovaries are infected it is difficult to understand why the

infection should die out as soon as the eggs are laid. Philip (1929) inoculated 200 eggs laid by an infective batch of mosquitoes at varying intervals after the first, second, and fourth blood meals, into six normal rhesus monkeys without producing any reaction. Also, negative results were obtained in five biting and two inoculation experiments with the adults hatched from other eggs laid by infected mosquitoes.

Stokes, Bauer, and Hudson (1928) had previously obtained negative results when they allowed 79 mosquitoes, reared from eggs laid by infected females, to bite a normal rhesus monkey, and Dinger, Schüffner, Snijders, and Swellengrebel (1929) record similar negative experiments. I have also obtained negative results as indicated in the two following experiments.

Batch R (African mosquitoes).—On Feb. 19th, 1929, monkey 164 was inoculated subcutaneously with the ground-up larvæ and pupæ kept at 28°C., which had developed from eggs laid by four *A. ægypti* fed on an infected monkey, Jan. 25th, and on Feb. 7th and 14th respectively. There was no reaction for 12 days and then the monkey was inoculated with infected blood and died of yellow fever five days later. The parent mosquitoes were fed on a normal monkey which died of yellow fever after five days.

Batch U (Indian mosquitoes).—On Feb. 20th, monkey 165 was inoculated with a suspension of the ground-up pupæ and adults that had developed from eggs laid by five mosquitoes fed three times previously on infected monkeys. There was no reaction and the monkey was tested subsequently for susceptibility and died of yellow fever five days after being inoculated with infected liver.

The results of all recent attempts to obtain evidence of the passage of yellow fever virus from one generation to the next in *A. ægypti* have thus been uniformly unsuccessful, and it is evident that if such transmission ever occurs, which seems doubtful, it must be so rare as to be of little or no importance in the maintenance of the disease in nature.

PASSAGE OF VIRUS FROM ONE MOSQUITO TO ANOTHER.

Marchoux and Simond (1906) were the first to show that mosquitoes might be infected without the intermediary of a vertebrate host. Freshly hatched mosquitoes were fed on an emulsion of infected mosquitoes ground up in syrup; 15 days later these insects were found to be infected, although they had never fed on a yellow fever patient. It is almost needless to add that such a method of infection could not take place in nature, but recently Aragão (1929, *b*) has suggested another manner in which the infection might be carried directly from one mosquito to another in the absence of any vertebrate host. Infected females, *A. ægypti*, were kept in contact with normal males, and the latter were found to become infected, as tested by grinding them up and inoculating the suspension into monkeys. Conversely, male mosquitoes that had been fed on a suspension of yellow fever virus were kept in the same cage as normal females, and the latter were found to become infected, as tested also by inoculating a suspension of their bodies into monkeys. The persistence of yellow fever in regions where long periods elapse without any recognised cases of the disease might be explained if it were possible for the infection to be spread in this way.

The following experiments suggest that these positive results are merely due to surface contamination of the mosquitoes by their infected fæces.

Batch 35.—On Dec. 13th, 1929, six female mosquitoes fed well on infected monkey 278 and kept at 28° C. Eleven days later four males that had been kept in the same pot were ground up and inoculated into normal monkey 291 which died of yellow fever five days later. A second monkey, 293, was inoculated with two males that had been kept with infected females for 41 days but failed to give any reaction, and when tested for susceptibility 19 days later, died of yellow fever four days after being inoculated with infected blood.

Batch 43b.—Five male mosquitoes that had been kept 19 days with infected females at 28° C. were washed in normal saline and the wash water inoculated into monkey 340, which showed a slight febrile reaction from the fourth to the seventh days after inoculation, which indicated a mild attack of yellow fever as the animal was found to be immune when subsequently tested for susceptibility. The five male mosquitoes, after having been repeatedly washed, were ground up and inoculated into a monkey 341 which showed no reaction, and when tested for susceptibility by the inoculation of infected liver after an interval of 44 days died of yellow fever six days later.

The results of this experiment indicate that there is merely a surface contamination of the males, presumably brought about by the infected fæces of the female mosquitoes. It is conceivable, but highly improbable, that such surface contamination might be passed on by the male to another female, but even in this unlikely eventuality, the bite of the latter would not become infective. Since the male never feeds on blood, it is impossible for it to ingest the virus except under experimental conditions, and therefore its fæces could never be infected in nature. The available evidence, therefore, affords no support to the hypothesis that the infection may be maintained in mosquitoes in the absence of cases of yellow fever.

DISAPPEARANCE OF INFECTION IN MOSQUITOES.

The percentage of *A. ægypti* becoming infected after having ingested yellow fever virus cannot be determined with any exactness except by the use of large numbers of animals. Also it varies with the stage of the infection in the blood, and according to external conditions such as temperature. The following experiment shows that by no means every mosquito becomes infective by feeding on infected blood.

Batch 33.—On Nov. 15th, 1929, 20 West African *A. ægypti* fed well on monkey 271, infected with a Brazilian strain of yellow fever, on the first day of fever. After feeding the mosquitoes were kept at 28°C. in a saturated atmosphere and fed on normal monkeys as follows:—

Monkey 284, on Nov. 26th, was bitten by single mosquito of batch 33; no reaction was observed during 10 following days, when another two females of the same batch were fed on it without producing any reaction. Twenty-eight days after the second feeding the monkey was inoculated with infected blood and died of yellow fever four and a half days later.

Monkey 285, on the same day, was bitten by a single mosquito of batch 33; no reaction during 14 days, when it was bitten by another single female of the same batch and died of yellow fever five days later. The mosquito used in this experiment was kept at 28° C. until Jan. 10th, 1930, when it was emulsified and inoculated into monkey 303, which failed to show any reaction.

Monkey 289, on Dec. 3rd, 1929, was bitten by a single mosquito of batch 33; no reaction during 13 days, when it was inoculated with infected liver and died of yellow fever five and a half days later.

Monkey 290, on Dec. 3rd, 1929, was bitten by a single mosquito of batch 33; became infected and died of yellow fever five days later.

Monkey 293, on Dec. 17th, was bitten by a single mosquito of batch 33, which had been fed on immune monkey 257 on the 10th. Monkey 293 became infected and died of yellow fever six days later.

Monkey 296, on Dec. 31st, was bitten by a single mosquito of same batch, which had been twice re-fed on a hyper-immunised monkey. The animal became infected and died of yellow fever after six days.

Monkey 298, on Jan. 3rd, 1930, was bitten by remaining two mosquitoes of same batch that had been kept at room temperature (10° to 15° C.) for the previous 40 days. The monkey became infected with yellow fever and was killed in extremis on the seventh day.

In this experiment out of 11 mosquitoes, five failed to become infective, whilst five produced infection by their bites. In the last positive experiment two individuals were used, so it is impossible to say whether both of them were infected or not. The incubation period of 11 days in the case of monkeys 284 and 285 may have been a little short, but one of

these mosquitoes was subsequently tested and shown to contain no virus. It will be noted that approximately half the mosquitoes became infected, and this result is supported by the general results of other feeding experiments. Usually three or more mosquitoes that had fed previously on an infected monkey were used for producing infection in a normal animal, and under these conditions only once have they given negative results. In three instances (118, 119, and 138), in addition to those recorded above, infections were produced by the bites of single mosquitoes, and in two instances single insects failed to infect; therefore, under the conditions of these experiments it seems probable that approximately half the mosquitoes become infective after a single meal of infected blood.

The infection certainly dies out in some mosquitoes, as shown in the following experiment.

Batch 26.—On Sept. 11th, 1929, seven *A. ægypti* were fed on a mixture of honey and the infected blood of monkey 228. A normal monkey, 229, was inoculated with 0·002 c.cm. of this mixture and died of yellow fever seven days later. On the 24th the mosquitoes were fed on a normal monkey, 243, which died of yellow fever also after seven days. On Oct. 29th a second monkey was bitten by the four mosquitoes remaining alive, but showed no reaction for 15 days, when it was inoculated with infected blood and died of yellow fever seven days later.

INFLUENCE OF IMMUNE SERUM ON VIRUS IN MOSQUITO.

Whilst studying the action of immune serum on the virus it seemed of interest to determine whether such serum had any action on the virus in infected mosquitoes. A preliminary experiment suggested that this might be the case for a batch of presumably infected mosquitoes (No. 22) that had been fed on an immune monkey, failed to produce infection when subsequently allowed to bite a normal monkey. It is impossible, however, to draw any definite conclusions from an experiment of this nature unless single mosquitoes are used, and consequently the test was repeated with isolated insects that had been shown to be infective.

Mosquito 33 D.—On Nov. 18th, 1929, fed on monkey 271, infected with Brazilian strain; on Dec. 3rd fed on normal monkey 290, which died of yellow fever after five days; on Dec. 10th fed well on immune monkey 257; and on Dec. 17th was allowed to bite normal monkey 293, which died of yellow fever six days later.

Mosquito 33 F.—On Nov. 15th, 1929, fed on infected monkey 271; on Dec. 10th fed on normal monkey 285, which died of yellow fever after five days; on the 13th fed on immune monkey 257; on the 24th fed on immune monkey 170; and on the 31st fed on normal monkey 296, which died of yellow fever after six days.

These results clearly indicate that once the infection has become established in the mosquito the subsequent ingestion of immune blood does not cause the mosquitoes to lose their infectivity. Dinger, Schüffner, Snijders, and Swellengrebel (1929) obtained similar results by feeding batches of infected mosquitoes on immune yellow fever patients. Sellards (1930), on the other hand, has reported the opposite result, but in his experiment two mosquitoes of a batch of mosquitoes that had fed on an infected animal produced a fatal infection, but another eight mosquitoes of the same batch when fed on an immune monkey failed to produce infection when fed on a normal monkey seven days later.

Although immune serum has no sterilising effect on infected mosquitoes, it prevents normal mosquitoes from becoming infected if ingested together with the virus, as shown in the following experiments.

Batch 51.—On May 13th, 1930, nine mosquitoes were fed on a mixture of hyperimmune serum 185, infected blood of monkey 349, and infected liver emulsion of 348. A little honey was added to the mixture immediately before feeding. On the 27th nine mosquitoes were fed on normal monkey 358, which showed no reaction during 10 days and when inoculated with infected blood died of yellow fever three and a half days later. On July 4th five mosquitoes remaining alive were ground up and inoculated into monkey 367, which also failed to show any reaction.

Batch 52.—On June 3rd, 1930, 11 mosquitoes were fed on a mixture of infected blood of 359, and immune serum of monkey 343, together with a little honey. On the 17th seven fed well on normal monkey 361, which failed to show any reaction.

The results of these two in vitro experiments show that the presence of a certain quantity of immune serum prevents the virus from becoming established in the body of the mosquito. The same result may be obtained in vivo when mosquitoes are fed on either human cases of the disease or infected monkeys, and the loss of infectivity to mosquitoes in such cases would seem to depend on the degree of development of immune bodies. Thus the blood of one patient (A. S.) who died of yellow fever, failed to produce infection in mosquitoes after the first day of fever although his blood contained the virus until at least the fourth day, as shown by the results of blood inoculation into monkeys (see Sellards and Mathis 1928).

Hudson and Philip (1929) have given particulars of some very interesting cases, of which one may be used to illustrate the course of infection in the blood of monkeys when the disease is prolonged beyond the usual febrile period of two or three days.

Details are given of a monkey infected by the bite of mosquitoes and which died of yellow fever eight days later. After two days' incubation period there were two days of fever, followed by two days when the temperature returned to normal, and finally two more days of fever before death. On each of the first seven days and twice on the last day two or three batches of mosquitoes were fed on the monkey and tested subsequently for infectivity. Of these batches of mosquitoes only those fed on the second to the fifth day became infected. One of the three batches fed on the second day, and one of the two fed on the fifth were negative, in addition to three on the first day, two on the sixth, three on the seventh, and six on the eighth.

Also each day blood was drawn off and subinoculated in other animals in doses of 0·5 and 0·05 c.cm. respectively. On the first day the larger dose produced infection whilst the smaller one failed to do so; then followed six days during which both doses were infective; whilst on the last day at necropsy, the larger dose failed to infect whilst the small one produced a fatal infection.

It is reasonable to assume that in such cases the production of antibodies begins at an earlier stage in the infection than in rapidly fatal cases, and this assumption helps to explain the early disappearance of infectivity to mosquitoes. It is evident from the experiments recorded above (Batches 51 and 52) that in the mosquito the presence of immune serum neutralises a very high concentration of virus. Blood on the first day of fever generally contains 1,000,000 to 10,000,000 lethal doses per c.cm., therefore the mosquitoes used in these experiments must have ingested relatively enormous doses of virus together with the immune bodies, and in spite of this the mosquitoes failed to become infected.

When such a mixture is inoculated into a susceptible monkey the conditions are very different, as the production of passive immunity depends on the amount of immune bodies introduced. It has been found that 0·1 c.cm. of immune serum will protect a monkey against infection (Stokes, Bauer, and Hudson, 1928), irrespective of the amount of virus subsequently inoculated. Consequently in the case of blood containing both immune bodies and virus, a large dose may introduce a sufficient quantity of immune serum to protect the host against the simultaneous inoculation of virus. When a small dose is used, however, the amount of immune serum introduced will be insufficient to protect the host against the smaller dose of virus and infection will result.

It may be noted, in parenthesis, that no appreciable difference has been observed in the course of the disease whether infection has been produced by 0·000001 c.cm. of infected blood or 3 g. of infected liver. The results of these observations suggest that in later stages of the disease minute doses of the blood are more likely to produce infection in experimental animals than large ones.

Discussion.

The results of recent observations on the transmission of yellow fever leave little doubt that the disease may be carried by many other species of aëdes in addition to the yellow fever mosquito *A. ægypti*. In addition two species belonging to allied genera have been shown capable of transmitting the disease.

Although these experiments have been conducted with monkeys there seems no reason to doubt that these mosquitoes could transmit the disease to human beings, for there is such a close parallel between the course of the infection and the pathological changes in both man and monkeys that it is extremely unlikely that the infectivity of the virus should be different in monkeys. Moreover, the numerous laboratory infections with virus that has been passaged through monkeys for long periods do not differ in any respect from natural infections.

The fact that other species of mosquitoes are capable of carrying the disease suggests that in the endemic centres of West Africa antimosquito campaigns should be directed against all mosquitoes indiscriminately. It is perhaps of some significance that all except one of these additional carriers are African species, and aëdes is predominantly an African genus, for there seems little doubt that the original home of yellow fever is West Africa, from where it spread to the New World. Consequently the antimosquito campaigns in the New World have been dealing primarily with epidemics, although doubtless the disease has become endemic in some regions of South America. In West Africa conditions are likely to remain much more difficult for any permanent eradication of the disease, for apart from political and social conditions, the occurrence of widely distributed sporadic cases at varying intervals suggests the existence of extensive endemic areas where the disease exists without being recognised. This is not unlikely, for some of the laboratory infections that have been recorded showed none of the ordinary clinical symptoms of the disease, and their nature was only recognised by subinoculating the blood into monkeys.

With regard to the conditions influencing the infectivity of mosquitoes, my experiments indicate that even at 18° C. a mosquito can become infective, and also that once having acquired the infection a mosquito retains its infectivity at temperatures as low as 10°–15° C.

Although a mosquito usually remains infective for the duration of its life, and in one of our experiments was proved infective after a period of 118 days, the infection is not transmitted to its offspring. Consequently the infection cannot persist in the absence of a vertebrate host, either man or monkey. The fact that virus can pass out in the fæces of infected mosquitoes may result in some insects becoming contaminated with infected fæces during copulation, but such exceptional cases can have no bearing on the persistence of the disease in nature.

The experiments with immune sera and virus in the mosquito show that the loss of infectivity of the blood is primarily due to the development of immune bodies, and not to the disappearance of the virus. The blood ceases to be infective when the concentration of immune bodies is sufficiently high to prevent the development of the virus in the body of the mosquito. Although this period obviously varies in different individuals, it is evident that the blood is most infective at the earliest stages of the disease. Moreover, experiments on monkeys indicate that the blood is also infective during the incubation period long before the appearance of any febrile symptoms.

Such being the case, it is evident that any serious prophylactic measures must be directed primarily against mosquitoes, combined with the use of vaccine or immune serum for the protection of non-immunes likely to be particularly exposed to infection. The screening of all yellow fever patients may be desirable, but it is very probable that many of them have ceased to be infective to mosquitoes by the time the nature of the disease has been recognised. Whilst the disease, in nature, seems to be transmitted solely by the bites of mosquitoes, the blood of yellow fever patients, at least during the early stages, is highly infectious, and great care should be exercised by hospital personnel to avoid contamination of the skin with fresh blood from such cases, as the virus seems able to pass through the intact skin. After the third or fourth day of fever the blood usually ceases to be infective, owing to the presence of immune bodies, consequently there seems to be practically no danger of acquiring the infection when performing autopsies on human yellow fever cases. In monkeys, owing to the more rapid course of the disease, this is not the case, and the blood and tissues are often infective at death.

SUMMARY.

1. The incubation period of the virus in the mosquito may be as short as nine days at 28° C., or indefinitely prolonged at low temperatures. 2. *A. ægypti* is capable of becoming infected if kept at a temperature not exceeding 18° C. 3. An infected mosquito retains the infection for at least six weeks if kept at temperatures from 10° to 15° C. 4. Mosquitoes that have ingested virus, if kept at 10° to 15° C., fail to become infective, but if the temperature is subsequently raised to 28° C. they become infective. 5. In one experiment out of 11 mosquitoes that fed once on an infected monkey and were kept at 28° C. five (or six) failed to become infective, whilst five (or six) became infective. In some individuals the virus disappears from the body; in others the virus persists in the body but the bite does not become infective. 6. A fatal infection was produced by the bite of one infected mosquito 118 days after it had become infected, and there seems no doubt that once infected a mosquito generally remains infective for the duration of its life. 7. The inoculation of eggs laid by infected parents, and also of larvæ, pupæ, and adults developed from such eggs, gave uniformly negative results. 8. Males kept with infected females were found to become contaminated by the infected fæces of the latter. Such contamination was merely on the surface of the males and was removable by washing. 9. An infected mosquito remains infective after having fed on immune blood. In other words, the immune bodies have no action on the virus once it has become established in the mosquito. 10. Mosquitoes that ingest immune bodies at the same time as virus fail to become infective. The prevention of infection seems to depend entirely on the strength of the immune bodies in the blood and is independent of the ingested dose of virus. 11. As a result of (10) the blood of a yellow fever patient ceases to be

infective to mosquitoes long before the virus disappears from the blood. 12. The blood of human yellow fever patients is highly infectious in the early stages and capable of spreading the disease by percutaneous infection, since the virus is able to pass through the intact skin.

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ABSCESSES OF THE LUNG:

THEIR TREATMENT AND DIAGNOSIS.

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(WITH ILLUSTRATIONS ON PLATE.)

IN common with others especially interested in diseases of the lungs, we have been struck with the increase of suppurative conditions of the lungs coming under observation during the last few years. Whether this increase is real and due to a more frequent incidence of the disease, or whether it is only apparent, and due to greater skill in diagnosis, radiological, and pathological examinations, and a consequent greater segregation of cases to chest hospitals is a very difficult problem; the same controversy arises over intrathoracic neoplasms. For a real increase the following causes have been suggested: (1) increased operative interference on the upper respiratory tract, and (2) the influenza epidemics of 1918, 1927, and 1929, with the associated streptococcal infections in the lungs. We strongly incline to the opinion that in both cases the disease is more frequent. Though the early diagnosis in either case is difficult, the late diagnosis can scarcely be mistaken, and, as a large proportion of abscesses and all neoplasms are fatal if not surgically treated, the terminal diagnosis would have been available in most of the cases in the past.

In this communication we report on the diagnosis, course, and treatment of 27 cases treated at Victoria Park Hospital in recent years.

Ætiology.

The possible causes of lung abscess are many, and are to be found in any text-book of medicine. We do not, therefore, propose to give a list of them here, but rather to comment on certain peculiarities.

Leon Kindberg [1] considers that 50 per cent. of abscesses are primary—i.e., the primary lesion is an abscess forming in the lung. In our series 16 cases, or 60 per cent., appeared to be primary, but in ten of these cases the onset was sudden, and it is impossible to ascertain if the sudden illness was the onset of the abscess or of an influenzal condition which was followed by an abscess. Flick [2] and Lockwood [3] have called attention to the frequency of influenza as an ætiological factor, at the same time pointing out that, although pneumococcal pneumonia is cited in text-books as a relatively common cause of abscess, in their experience this has not been the case.

Clifford Allbutt's "System," 1908, quotes Tuffier's series of 49 cases, 23 of which were metapneumonic, and Aufrecht's series of 253 fatal cases of pneumonia, with three abscesses. Müller [4] supports Flick and Lockwood as to the infrequency of abscess after pneumonia of pneumococcal origin, and we are entirely in agreement with him. Only one case of our series followed pneumonia. Richardson [5] first called attention to the occurrence of lung abscesses after tonsillectomy, and Wessler [6] and Hedblom [7] in their series found that 28 per cent. and 21 per cent. respectively followed tonsillectomy. Lord's [8] figure is even higher—34 per cent. Whether lung abscess after tonsillectomy be due to infective emboli, aspiration of sloughs, or accidents of aspiration during the operation, one would conclude from experience in general hospitals that, in this country, pulmonary abscess following throat operations is not anything like so frequent as has been recorded elsewhere. In our series there were only 16 per cent., and though this low figure might be erroneous—inasmuch as lung abscess following tonsillectomy develops within five to ten days after operation and, therefore, the condition would be treated at the hospital at which the operation was performed—yet in our experience it is a condition seldom met with in a general hospital.

Lung abscess may follow any operation in which a general anæsthetic is used. In our series 6 per cent. followed general anæsthesia. This figure is also lower than that reported by other authors, but again might possibly be due to some extent to the factor mentioned above. A foreign body lodged in a bronchus is considered by American authors to be a fairly frequent cause of lung abscesses (Tucker [9]). Possibly this is due to the wider use of chewing-gum and pea-nuts in that country; one of the authors had a case (not in this series) commencing with inhalation of husks on a threshing floor. In our series only one case occurred.

Lung abscess may follow any pathological lesion occluding or partly occluding a bronchus—e.g., aneurysm, bronchial carcinoma, mediastinal glands, syphilitic stenosis, or neoplasm. Nowadays bronchial new growths are seen frequently, and not uncommonly associated with pulmonary suppuration. We have excluded several such cases from the series because the treatment is of the causative condition rather than the abscess. We might perhaps mention one case, with no cough, no sputum, and no fœtor, who

was profoundly toxæmic; at autopsy the whole lung was a foul gangrenous sac, completely occluded by a growth of the bronchus. Occlusion may occur to a lesser degree in abscess on account of pressure or turgescence of the bronchial mucosa, and may mask the symptoms.

Sex incidence.—In our series males were affected three and a half times as frequently as females; this is in accordance with the figures given by other authors.

Age.—Lockwood gives the most frequent age as between 25 and 40 years. In our series 70 per cent. occurred between the ages of 20 and 45.

Site.—The right lung was affected two and a half times more frequently than the left, the lower and mid-zone four times more often than the upper. These figures approximate to those of Lockwood, Hedblom, and Moore.[10]

Classification.

The French writers Leon Kindberg, Kourilsky,[11] Bernard and Desbucquois,[12] and Sergent,[13] describe various forms of abscess, paying particular attention to the bacteriology. The American authors do not make this differentiation, including all cases under one heading of lung abscess or pulmonary suppuration. Ballon [14] classifies as follows:—

(*a*) (1) Single abscess, with or without fluid level in skiagram; (2) bronchiectatic abscess, acute or chronic; (3) abscess associated with bronchiectasis. (*b*) Multiple abscesses which may be associated with bronchiectasis. (*c*) Secondary to new growth. (*d*) Tuberculous.

In our series the bacteriology of the sputum gave the following results: streptococci, 11 cases; streptococci and pneumococci, 5 cases; pneumococci, 2 cases; streptococci, spirochætes, and fusiform bacilli, 8 cases.

We were unable to differentiate the abscesses bacteriologically, but all the cases with spirochætes in the sputum, with one exception, were long-standing chronic cases. We favour Ballon's classification because, by means of lipiodol injection of the lungs, it is possible to distinguish these various conditions, and because the various classes require different treatment. Our series can be grouped as follows: single abscess, 20 cases; abscess associated with bronchiectasis, 1 case; bronchiectasis with abscess, 2 cases; multiple abscess with bronchiectasis, 2 cases.

Symptoms and Signs.

In acute cases the disease commences with a sudden onset of fever and malaise, and there may be rigors. Cough develops early; at first dry, it gradually becomes looser, and small quantities of muco-purulent sputum are raised. As the abscess makes communication with a bronchus the sputum becomes purulent and is brought up in large quantities. This large amount continues for some days, and then gradually falls to a lower level, at which it remains constant. Sometimes it will cease for a time, to be brought up again suddenly in large quantities; this is due to temporary occlusion. The odour of the sputum is usually offensive from the time it becomes purulent, but this is variable and the sickening smell may not develop until the abscess has become chronic, and secondary infection with anaerobic organisms has taken place. It is rarely that the sputum does not become foul. The amount varies, the smallest in our series being half an ounce daily, the largest 30 ounces, and the average between 5 and 10 ounces daily.

Fever is usually present, and is often increased with the retention of sputum. Rigors and chills may occur; 12 of our cases had fever up to 101° F., ten had a high swinging temperature, and four were afebrile whilst under observation; but in three of these the abscess had been evacuated through a bronchus before admission and healing was taking place. Hæmoptysis may occur early from congestion in a bronchus, and is an initial sign of the evacuation of an abscess through a bronchus. It usually occurs later in the disease; 24 per cent. of our cases had hæmoptyses, two severely, and one fatally.

There are no physical signs characteristic of the disease. Impairment of percussion note is constant, frequently with some flattening of the affected side. Most commonly the signs are those of consolidation, occasionally of cavitation, and the breath sounds correspond, but in some cases are weak or absent; while, if an abscess cavity be present, the signs vary from day to day as the cavity fills and empties. The signs may be only those of effusion, if this be present. Coarse clubbing of the fingers occurred very frequently (70 per cent.) in our series. It is a matter of some surprise how seldom this has been noticed by the patient; we have known only one patient—a young woman (not included in this series)—remark on it. Flick has pointed out the rapidity with which clubbing may occur; we ourselves have seen marked clubbing disappear in a week after irradiation, in a case of mediastinal lymphadenoma.

Leucocytosis is usually present. In our series 18 per cent. had over 30,000 white cells, 50 per cent. had between 20,000 and 30,000 white cells, 22 per cent. had 15,000 white cells, and only 2 per cent. under 10,000.

Early in the disease there is no marked wasting, but if the condition goes on untreated the fever, cough, and anorexia produced by the foul exhalation lead to marked emaciation.

Complications.

The most common complication is a pleural effusion, which may be serous or purulent. Pyopneumothorax may occur and, if the pleura becomes infected, a broncho-pleural fistula may cause complications. We have seen this occur in our series in one case, and as a result of treatment. Cerebral abscess is rare; we have seen it only twice, and it was not a complication in any of the cases recorded.

Diagnosis.

The possibility of a lung abscess must always be considered when, following on the acute onset of a respiratory illness, about the tenth to the fourteenth day a large amount of purulent sputum (which may or may not be offensive) is coughed up. A missed empyema is seldom evacuated via a bronchus as early as this. The history is not always spontaneously given, and must be carefully inquired into when investigating a case of this type.

The conditions most often confused with lung abscess are pulmonary tuberculosis, interlobar empyema, new growths, bronchiectasis, gumma, and purulent bronchitis. If the lesion is in the mid-zone or basal portion of the lung and unaccompanied by apical signs it is unlikely to be tuberculous, but if it is in the upper lobe the similarity with tuberculosis may be very great, particularly if the patient has had a hæmoptysis. Two of our cases had been sent to sanatoria. Levald and Green,[15] Flick, Singer, and Graham [16] have called attention to this confusion with tuberculosis. Radiology and repeated sputum examinations will exclude this disease.

In interlobar empyema the history, physical signs, and radiological picture may be very similar to those

of abscess. The character of the sputum may help, and the rupture is usually later in the disease. Though it would seem that an interlobar or simple empyema discharging through a bronchus approximates very nearly to a lung abscess, yet the condition commonly clears up rapidly without much evidence of infection of the parenchyma of lung. Leon Kindberg, Sergent,[17] and Kourilsky[18] believe that lung abscesses are of much more frequent occurrence than interlobar empyema; this is also our experience.

A carcinoma in the parenchyma of the lung usually produces much hæmoptysis and no pus. A bronchial carcinoma in the early stages is comparatively easy to diagnose, and fever is not present; in the later stages, when bronchiectasis or abscess has occurred in the collapsed lobe, differentiation is impossible, but the history is always of some length and antedates the fever and excessive expectoration considerably. New growth is frequently accompanied by supraclavicular glands, and bronchoscopy should be done on all doubtful cases.

The physical signs, history, and radiological appearance of gumma may be very similar to those of abscess, but the Wassermann reaction and therapeutic test are sufficient to establish a diagnosis.

Bronchiectasis is distinguished by its long history (though periods of high fever may occur there are long apyrexial periods), by an absence of leucocytosis, and, if the bronchiectasis is associated with an abscess or a bronchiectatic abscess is present, by radiology.

BRONCHOSCOPY.

American authors consider this method of very considerable use in diagnosis. Miller,[19] Graham,[20] and Jackson[21] consider it should always be done in the hope that it may reveal a foreign body, the removal of which greatly facilitates the cure. In five of our cases it was done as a diagnostic procedure, and in each case was successful in definitely confirming the presence of an abscess; in three cases it was useful in giving negative information concerning new growth.

RADIOLOGY OF LUNG ABSCESS.

The radiological findings are not characteristic. There is usually a shadow with a diffuse margin, except where the abscess may come in contact with the pleura, at which point the shadow becomes sharply defined. A similar shadow may be found in tuberculosis, neoplasm, atelectasis, infarct, or interlobar empyema (Pancoast[22]); 19 of our cases showed this type of shadow, which may be modified by such conditions as pleural effusion. Less commonly the skiagram shows a cavity in which a fluid level may be seen (eight cases), but here also the diagnosis cannot be made on the plate alone.

We wish to emphasise the fact that the diagnosis of lung abscess is made on the history, physical signs, and examination of sputum; the X rays are of use in confirming these signs, but their main function is to locate the position of the abscess and assist in its classification—both points of great importance when considering the treatment.

An anteroposterior view shows if the lesion is in the region of the hilum or the periphery. A lateral view shows if the abscess is anterior or posterior; in 13 of our cases a lateral view was of the greatest assistance in localising the abscess. Lipiodol injection of the bronchial tree aids in localisation and in the exclusion of bronchiectasis in the other lung, but is mainly of use in classification. Mostly the lipiodol does not enter the abscess but passes into the bronchi around it, thus assisting in localisation. It marks out the bronchiectasis which may be associated with an abscess. In those cases in which the bronchiectasis is primary, with a secondary abscess, the lipiodol shows the bronchiectasis but does not enter the abscess (Ballon). Rarely the lipiodol will enter to show multiple abscess cavities, a finding of considerable importance from a therapeutic standpoint.

Medical Treatment.

No definite rule for treatment can be laid down. Each case must be considered individually and attention paid to the condition of the patient, the nature of the abscess, and its position and duration. A number of acute abscesses will heal by medical treatment alone, and surgery should not be called in until all hope of obtaining a cure by medical means has been abandoned. Medical treatment consists of rest in bed, measures to support the patient's general condition, especially the heart and circulatory system, postural drainage or drainage through a bronchoscope.

Graham, Lambert,[23] Müller, Lord,[24] Bernard, Dreyfus, Desbucquois,[25] and Leon Kindberg have all pointed out the tendency to spontaneous recovery in acute cases. In our series five cases recovered thus.

Various drugs have been employed to assist in resolution.

Emetine.—Sternberg,[26] Laederich and Paumeau-Delille,[27] and others have used this drug with success. In our series it was used in two cases, where we believe that it assisted materially in their recovery. In one case the patient felt greatly benefited, and was much less toxic after treatment, but we do not think it was of any substantial service. Three cases were not benefited. The dosage is gr. 1 daily for 8 to 12 days, preferably combined (as suggested by one of us (A. J. S. P.) in amœbic dysentery) with strychnine gr. 1/30 to prevent the depressant action on the heart muscle.

N.A.B. (given intravenously). — Smith[28] and Archard and Soulie[29] report good results, especially in those cases with spirochætes in the sputum. Three received this treatment; in one the result was most satisfactory, but in the others no result was obtained.

Lipiodol.—We have found that in bronchiectasis the intratracheal injection of lipiodol often has a beneficial effect; in one case lipiodol injection was given three times as a therapeutic measure, and seems to have assisted recovery.

Nine cases recovered on medical treatment alone.

Surgical Treatment.

Müller, Hedblom, Lord, Kern,[30] Lockwood and Kindberg all agree that an acute lung abscess should be treated on medical lines for two or three months before any surgical intervention, but that delay must not be undue if improvement does not take place. Surgical treatment consists in compression or direct drainage. Artificial pneumothorax has been advised as a means of treatment by many authors: Bredow,[31] Jacobaeus,[32] Tewksbury,[33] Forlanini,[34] and Goldberg and Beisenthal.[35] Others—Krampf[36] and Müller—have advised against it.

Artificial pneumothorax is worth a trial when there is an encapsulated abscess deep in the lung (in one such case we had a good result), and also probably in the diffuse type of abscess when the attendant risks of this procedure and of the more severe thoracoplasty are not very unequal. Generally in those cases where the abscess is near the periphery a pneumothorax will cause a pyopneumothorax—usually considered a grave complication. This complication occurred in four of our cases; in one it resulted from

thoracoplasty. One died; the other three, after drainage, made a complete recovery. In one case (a chronic abscess) artificial pneumothorax was carried out for five months with some improvement, but the condition is at present not cured. Of five cases treated by artificial pneumothorax, one was cured directly, two were cured after drainage and pyopneumothorax, one is still under treatment, and one died.

Phrenic avulsion.—Falta [37] has treated four cases by this method with success. We have not used it as a curative measure, but in one case it was used as a palliative. The patient being extremely ill with severe hæmoptysis, it was feared that direct incision might be fatal; the hæmorrhage ceased and drainage was successful later.

Thoracoplasty.—This was only used in two of our cases. One died after a few days of broncho-pneumonia in the sound lung; the other developed a pyopneumothorax and recovered after drainage. We agree with Sergent, Baumgartner, and Kourilsky [38] that the operation is most successful in dealing with a cavity left after drainage.

Drainage.—By this we mean direct drainage of the abscess. We believe that this operation is best done in two stages. The first stage consists of resection of the rib; the pleura is sewn, if it is not adherent, and packed. The second stage should be proceeded with after five to ten days; the abscess is opened with knife or cautery and a drainage-tube inserted. If the pleura is firmly adherent at the first stage drainage may be completed at once. Brauer,[39] Meyer,[40] Hewer and Macbready,[41] and others are in favour of this method of procedure. We consider the operation is best carried out under local anæsthesia. Four cases were treated in this way; two made an uninterrupted recovery, one died soon after operation, and one improved, but the drainage closed and the patient died of pneumonia at a later date. The dangers of the operation are shock and hæmorrhage; the latter did not occur in our cases.

For multiple abscess and bronchiectasis associated with abscess, lobectomy and cauterisation is advised by Singer and Graham, Sergent, Baumgartner, and Kourilsky. We have had no experience with this operation.

Results.

The following table summarises the results of medical and surgical treatment:—

Form of treatment.	No. of cases.	Satisfactory.	Improved.	Not benefited.	Died.
	14	11	1	—	2
Medical—					
Spontaneous recovery	—	5	—	—	—
Emetine	6	2	1	3	—
N.A.B.	3	1	—	2	—
Lipiodol	1	1	—	—	—
General treatment	7	7	—	—	—
Surgical—					
Artificial pneumothorax	5	3*	1	—	1‡
Phrenic avulsion	1	—	1	—	—
Thoracoplasty	2	1†	—	—	1
Direct drainage	4	2	1	—	1

* Two after pyopneumothorax. † After pyopneumothorax. ‡ Pyopneumothorax.

The mortality-rate in lung abscess is given by various authors as from 58 per cent. in medically treated cases to 35 per cent. in those surgically treated. Singer and Graham report a surgical mortality of only 32 per cent. The variation depends largely on the number of cases which have become chronic before coming under observation. In our series the mortality-rate of those requiring surgical treatment was 43 per cent.

Conclusions.

1. In the diagnosis of lung abscess a careful history, physical examination, and pathological investigation of the sputum are all important.

2. Radiology is of most use, not in diagnosis, but in location, classification, and in following the result of treatment.

3. An acute lung abscess should, for a period of six to ten weeks, be medically treated with postural drainage, during which time emetine, N.A.B., or other drugs may be employed. If, after this period, the condition is not clearing, surgery must be resorted to. If the case when first seen is judged from the history to be of longer standing than six to ten weeks, it should be considered as chronic, and surgical treatment proceeded with.

4. Artificial pneumothorax can only be regarded as safe in the deep-seated encapsulated abscess; its use in other cases must be carefully considered in regard to the comparative risks.

5. The operation of choice is direct drainage performed in two stages under local anæsthesia.

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Note.—Since this paper was written an interesting article has been published in the *Journal* of the American Medical Association (Sept. 13th) by H. I. Spector, stressing even more than we have done the advisability of medical treatment.

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TWO CASES OF ACUTE SILICOSIS,

WITH A SUGGESTED THEORY OF CAUSATION.

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With a Note on the Chemical Examination of the Lung by

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E. A. Rudge, M.Sc., F.I.C.

The present inquiry arose out of the death of two girls working in a London factory. They had been employed (Case 1 for 2¾ years and Case 2 for 4¼ years) in packing a cleaning-powder containing ground silica, and since death could only be attributed to their occupation, the cause of death was described as "industrial silicosis."

The cases attracted a good deal of medical interest at the time, and offer noteworthy features for comparison with the usual type of silicosis. They occurred in young females after a relatively short period of exposure to the silica dust, and in both cases death ensued very soon after the onset of the first symptom. The following clinical and pathological notes will serve to draw attention to the unusual features.

Report of the Cases.

Case 1.—A girl, aged 17, attended Battersea Tuberculosis Dispensary for the first time on April 27th, 1928, complaining of slight cough and pain in the chest. She gave a history of cough for one week before Christmas, and for five weeks before attending the dispensary. She had had no previous illnesses, and there was no family history of tuberculosis. She was somewhat poorly nourished and anæmic, and complained of slight shortness of breath on exertion, but there was no marked dyspnœa. On first examination her temperature was 100·4° F., and her pulse-rate 124. No tubercle bacilli were found in her sputum, which was scanty and brought up with difficulty. There was markedly diminished movement of the right lung with marked impairment of the percussion note at the right base. The breath sounds at the base were bronchial in character, and there were numerous superficial crepitations.

She was admitted to St. James' Hospital, Balham, on April 30th, and her condition deteriorated rapidly. Dullness was present in both lower lobes, and spread upwards while she was in hospital. The breathing over the dull area became tubular, with much increased vocal resonance and whispering pectoriloquy, and there were many fine superficial crepitations. She became markedly dyspnœic and cyanosed and had a swinging, irregular pyrexia all the time. Her sputum, which was always scanty and mucoid in type, was examined on three occasions, but no tubercle bacilli were found. On June 3rd her condition became much worse, with very urgent dyspnœa and intense cyanosis, and she died in hospital on June 4th.

Post-mortem Examination.—The lungs showed no collapse on opening the thorax, though there were no adhesions. When removed from the body they were bulky and very heavy, and preserved their correct anatomical shape. The surface was covered with a fine, granular, pleural exudate under which the lung appeared grey in colour, speckled with small lighter-coloured dots. On section they were extremely tough, grating as the knife went through the tissue. The lower lobes appeared to be completely solid, except for small areas at the apices which still contained air. They were of a greenish-grey colour, resembling in a general way some kind of marble. They were dotted with innumerable tiny pinhead nodules of a lighter grey colour. The upper lobes still contained air, but were tougher than normal and studded with small, bluish-grey nodules about the size of a pin's head. The bronchial, mediastinal, and some of the cervical glands were much enlarged, extremely tough, and showed on section a similar marbled appearance. The heart showed recent fibrinous pericarditis, but the other organs showed nothing noteworthy.

Microscopical Report.—The lung showed numerous large fibrotic patches which were practically a-cellular. Surrounding these patches was a comparatively intense small-celled infiltration. In the interstices of these fibrotic areas there was a finely granular black or brown deposit. The alveolar tissue was much reduced. The alveolar walls were much thickened with fibrous tissue, while the lumen of the alveoli was filled, in most instances, with an albuminous exudate enclosing desquamated cells and a finely granular substance. There was no histological evidence of tuverculosis and stained sections showed no bacilli.

Case 2.—A woman, aged 19, attended the Battersea Tuberculosis Dispensary for the first time on May 3rd, 1928. She was fully employed at the factory until the time of her first visit to the dispensary, and was only persuaded to attend as the result of a routine examination of the employees of the factory by a medical officer. She was very poorly nourished, and complained of slight cough and pain in the chest of a week's duration. Her only illness was an attack of pleurisy a year previously. Her father had died of pulmonary tuberculosis. There was no evidence of dyspnœa on the first examination, and no cyanosis.

On physical examination the movement was slightly less at the left base, the percussion note was impaired at the right apex and left base, and crepitations were heard at both bases. The sputum, which was scanty, was examined, but no tubercle bacilli were found. The radiologist's report was: "suggestive of miliary tuberculosis." She was recommended for institutional treatment for observation, with a provisional diagnosis of ? silicosis, ? miliary tuberculosis, and was admitted to Brompton Hospital on June 1st. We are indebted to the Medical Committee at Brompton Hospital for permission to use the following notes on her condition while an in-patient there:—

"Looks very ill, breathing rapidly and cyanosed. Pulse regular and feeble, pulse-rate 140–160. Spleen just palpable. Respiration rapid, note impaired over both apices, especially the right behind, and over the right base. Breath sounds generally harsh. Bronchial breathing over the right apex in front, over middle zone of right lung behind, and a patch of very high-pitched bronchial breathing by the angle of the left scapula. Fine and coarse râles and some rhonchi heard all over the right lung, and some fine râles over the left lung. Respiration-rate 50–60. Albumin present in the urine. On admission she was emaciated, with slight cough and very marked dyspnœa. Whilst in hospital her temperature varied between 100° F. and 103° F. She gradually became weaker with very marked dyspnœa and cyanosis and died on June 16th."

Post-mortem Examination.—The lungs in this case showed a similar but less marked condition to those in the previous case. The fine grey nodules were prominent but there was no massive fibrosis of the lobes. The lungs showed no sign of caseation and no giant-cell systems were found to be present in sections, but sections stained by the ordinary method showed tubercle bacilli.

Nature of the Disease.

From the foregoing clinical and pathological data it will be evident that the disease from which these girls died is definitely different either in kind or in degree from that previously encountered and recognised amongst workers in such dusty trades as mining, stone-cutting, and the manufacture of pottery. At the same time, it is equally certain that the ground silica used in the manufacture of the cleaning-powder handled by the girls was essentially the same in all important respects as that occurring in these other trades. One is therefore forced to the conclusion that the deaths cannot have been caused by the inhalation of silica dust alone, and that the other ingredients of the powder must be held responsible for the unusual features of these cases. It is contended that this conclusion is logically inevitable, irrespective of whether the mechanism of the disease now suggested is eventually substantiated or disproved.

All living creatures, animal and human, primitive and civilised, continually inhale varying small quantities of silica in the form of sand and road dust. Since this does not accumulate it must be absorbed in some way, presumably as colloidal silica, which is taken up in the blood stream and passed out of the body.

It is now possible to consider what modification of this colloidal process is likely to be caused by the deposition, with silica, of the other ingredients of the cleaning powder. This powder contained about 75 per cent. pure silica, the remaining 25 per cent. being soap powder containing sodium carbonate and soap. What is likely to be the result when crystalline silica is converted to colloidal silica in the presence of sodium carbonate? The answer is fairly certain, and twofold. (1) The colloidal silica and soda will combine, giving sodium silicate, or soluble soda glass, having an approximate formula Na_2SiO_3. (2) Owing to the presence of Na_2CO_3, colloidal silica in the "sol" form will be rapidly converted to the "gel" condition. Since there is more than enough silica in the dust to satisfy all the soda, it is more than probable that both of these reactions will occur.

The chemical conditions in the lung tissues are now entirely different from those occurring when pure silica is deposited. Colloidal silica does not react in any notable manner with salts of, say, calcium and iron. On the other hand, sodium silicate immediately reacts with calcium and iron salts in solution, giving precipitates of the respective silicates, which are insoluble. It is particularly noteworthy that the iron silicate obtained in this manner is green in colour, and this fact accounts in at least a reasonable way for the green colour which was a special feature of the lungs. It may be objected that the quantity of iron salts present in the blood is extremely small. This is perfectly true, but the ground silica of commerce itself contains appreciable quantities of iron. A certain small percentage is present in the original stone, and a quantity is added by abrasion from the crushing and grinding machinery.

The suggested progress of the disease may, therefore, be set out in stages: (1) Silica dust is deposited in the lungs and converted to colloidal silica. (2) Colloidal silica reacts with sodium carbonate, also present in the dust, giving sodium silicate and causing the excess of the colloid to assume the "gel" condition. (3) Sodium silicate reacts with calcium, iron, and other salts present in solution, giving precipitates of insoluble silicates. (4) The deposition of insoluble silicates is cumulative, and continually builds up a film or layer of increasing thickness; at the same time the "gel" colloid is more slowly absorbed than the "sol," and adds to the condition of general congestion. (5) At a certain stage the deposited layer becomes dense enough to prevent the normal function of the lung in converting silica to colloid, and from this stage onwards the silica dust deposited will accumulate in its original state.

Should the foregoing hypothesis be correct, an examination of the lung tissue should reveal a kind of stratified formation, somewhat in the following manner: (1) Layer of insoluble silicates, greenish in colour from iron. (2) Layer of insoluble silicates, in a matrix of gel or amorphous silica. (3) Layer of pure sandy silica which the congested lungs have been unable to convert to colloid.

The same process will account satisfactorily for the extensive and very rapid fibrosis. If mineral matter is deposited over a wide area of lung tissue in small but regular quantities and is not absorbed, the consequent irritation must inevitably give rise to rapid fibrosis over the whole area affected. This fibrosis would add to the general stagnation and hasten the stage where natural absorption of silica is ultimately prevented.

The action of the soap present in the powder has not been taken into account, since the alkali appears to provide all the explanation necessary, but it is quite possible that the colloidal nature of the soap itself may have some bearing on the problem, especially in the more advanced stages of the disease.

Chemical Examination of Silicotic Lung.

(DR. ARNALL AND MR. RUDGE.)

In the first case it was believed that the crux of the problem from the chemical point of view was to determine whether the silica in the lung was present in the free state (in broken crystalline particles as inhaled) or whether it was combined with iron and perhaps calcium in the form of amorphous and relatively insoluble silicates. In actual practice the problem was complicated by the fact that the lung had been preserved in a formaldehyde-acetate mixture, which by oxidation would contain free acids, such as formic acid. It follows that even if all the silica in the lung had been in the combined state, immersion in the preserving mixture would have caused a tendency for the following reaction to take place:—

Combined silicates + formic acid
$\rightleftharpoons$ Formate + silicic acid (colloidal).

The extent of the reaction or the position of equilibrium is dependent upon the solubility of the silicate present and the concentration of the acid.

The examination was therefore attempted in the following way: (1) Determination of total silica. (2) Determination of combined silica. (3) Determination of colloidal or precipitated silica. (4) Determination of free crystalline, or original silica.

Further experiments were carried out on the absorption of soluble silicates by lung tissue, in order to ascertain to what extent the silica was fixed by substances present in the lungs.

EXPERIMENTAL RESULTS.

General Observations.—The silica content of the lung varied considerably with locality. In the region of the main air ducts the proportion was much higher than in more remote tissue. All the results given are calculated on lung tissue dried to constant weight at 105° C. The loss of weight on drying was approximately 60 per cent.

Total Silica.—The dried lung was digested in nitro-sulphuric acid until all organic matter had been oxidised. The precipitated silica was ignited in a platinum crucible, and the loss of weight on volatisation with hydrofluoric acid recorded as silica.

Amounts of Silica obtained from 100 g. of Dried Lung.

(*a*)	Remote area	0·65 g.
(*b*)	Intermediate area	1·09 ,,
(*c*)	Vicinity of main ducts	2·70 ,,

Combined Silica.—Silicates on reaction with dilute acids give colloidal silicic acid, which is soluble. The finely divided tissue was, therefore, refluxed with an aqueous-alcoholic solution of hydrochloric acid until it was completely disintegrated. The relative amounts of soluble and insoluble silica were then determined, and results showed that about 15 per cent. of the total silica was still in the combined state. This result was confirmed by microphotographic examination, using polarised light, of sections of lung cut by microtome from the frozen material. When a section including small air-channels was examined, it was observed that, in some cases, bands of mineral matter were present, more or less concentric with the air ducts. Thus, when the nicols were crossed, the whole field became dark with the exception of these bands, which were slightly luminous but showed no characteristic crystalline form.

Colloidal or Precipitated Silica.—The colloidal or precipitated silicic acid, produced by decomposition of silicates formed in the tissue, was determined approximately and with difficulty, but it should be borne in mind that its presence is indicated rather than definitely proved. Unless natural silica is in an extremely fine state of division it is not dissolved by very dilute caustic alkalis, while the colloidal acid is soluble. Digestion of the tissue in such an alkaline solution would result in all the combined and colloidal silicic acid being dissolved, while crystalline silica would not go into solution unless it were in a very fine state

of subdivision. Experiments showed that considerably more silica was so absorbed than was accounted for by the determined amount of combined silica plus the fine silica which could be extracted in a similar manner from the original product. It should be noted, however, that the dust absorbed by inhalation would contain a relatively high proportion of fine particles.

Special sections were stained in an attempt to show the colloidal matter microscopically. It is known that colloidal silicic acid will absorb ferrocyanides which cannot be removed by washing, and that on further treatment with ferric chloride the silicic acid is rendered visible by the precipitation of Prussian blue. This result was actually obtained, but must be accepted with reserve, since it might conceivably have been derived from other colloidal material present in the lung.

Original Crystalline Silica.—The presence of this was conclusively shown by microphotographic observation. The particles became apparent by polarised light, and were of the shape and type of the larger particles in the powder inhaled by the deceased.

Other Experimental Results.—Experiments were also made with lungs removed from sheep and pigs immediately after slaughter. These were immersed in dilute solutions of sodium silicate. It was found that silicates were formed in the tissues and precipitated therein, and that they were not subsequently removable by washing. The amount of silica combined in this way was very considerable. The presence of silica in lung material so treated implies precipitation of insoluble silicates, but in the case of a living creature the presence of carbon dioxide might be sufficient. Silicic acid is a weaker acid than carbonic acid, and in the reaction: $Na_2SiO_3+CO_2+2H_2O \rightleftharpoons Na_2CO_3+SiO_2.2H_2O$ (colloidal) the resultant colloidal silicic acid would not, in all probability, diffuse through tissue permeable to crystalloids.

CONCLUSIONS.

The results of the experiments outlined above indicate the presence in the affected lung of: (1) Combined silica. (2) Free silicic acid derived from combined silica. (3) Original crystalline silica. It should be noted that the amount of iron found in the lung was sufficient to satisfy the combined silica present.

Significance of Above Observations.

(MR. GILDER, DR. MACDONALD, AND DR. PIGGOT.)

The results of the chemical examination appear substantially to bear out the mechanism and sequence set out in the theory. It has not yet been clearly shown, however, whether the disease operating in these cases is definitely different in nature from ordinary silicosis or whether it is merely silicosis under the most unfavourable conditions progressing at the maximum rate. It may well be that the explanation given of the cases under review is at the same time an indication of the actual mechanism of silicosis due to pure silica dust. If rapid silicosis results from the inhalation of silica dust with ample supplies of alkali, slow silicosis could conceivably be brought about by the reaction of inhaled silica with the comparatively small quantities of alkali normally present in the lungs.

If the theory outlined is correct, it indicates how the future occurrence of silicosis in this rapid form may be definitely prevented. If steps are taken to ensure that silica dust is never inhaled at the same time as alkaline dust, the risk involved in the handling of silica is immediately reduced to that of ordinary silicosis, which is infinitely less rapid and fatal. In this connexion it is interesting to recall that the soap powders of commerce are of two separate and distinct kinds. In the one case, hard soap is dried, ground, and mixed with the required quantity of ground, anhydrous sodium carbonate. Such a soap powder is very light in texture, and forms dust clouds with little agitation. The other form of soap powder is made by a wet process, in which soap and alkali are dissolved and crystallised together from solution. The dried product contains about 40 per cent. of water and is of a somewhat coarse, heavy texture, requiring great agitation to form a cloud and settling rapidly. It is suggested that a regulation prohibiting the use of any but "wet process" soap powders where admixture with silica is to be carried on would reduce the risk of silicosis to negligible proportions.

It is interesting to note that the occurrence of "alkaline" silicosis is independent of the quantities of dust inhaled, since the effect is cumulative. As has been noted, small quantities of pure silica can be dealt with by the body and, as long as a certain factor of safety (presumably varying with the individual) is not exceeded, little or no harm is done. If, therefore, in any works using pure silica a suction plant continually keeps the concentration of dust below the safety limit, the risk of silicosis is totally eliminated. In works using mixed dust, however, there is no factor of safety except the total prevention of alkaline dust, since the smallest possible addition of this to the silica dust will give rise to the chemical reactions outlined above. The use of a form of alkali which does not readily form a cloud is, therefore, of considerable importance.

CLINICAL AND LABORATORY NOTES

A CASE OF PATHOLOGICAL FRACTURE DUE TO MALIGNANT METASTASIS:

CURE BY DEEP X RAY THERAPY.

BY F. HERNAMAN-JOHNSON, M.D. ABERD., D.M.R.E. CAMB.,

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(WITH ILLUSTRATIONS ON PLATE.)

UNTIL comparatively recently, fractures due to invasion of bone by metastasising breast cancer were considered almost hopeless. It is true that a few of them united spontaneously when treated on ordinary lines, but, in general, no attempt at union occurred, and a series of radiograms showed a progressive eating-away of bone by the metastatic growth. To take an entirely pessimistic view under such circumstances is no longer justifiable. By the judicious use of deep X ray therapy union may sometimes be brought about, and this is well worth doing, because a patient is not necessarily near her end when a single bone metastasis develops, but may live for years in good health. The following case is of interest.

A married woman, aged 42, was admitted to hospital on May 31st, 1928, suffering from a fracture of the right hip. The history was rather vague. The patient was out shopping, and thinks she caught her toe in some inequality in the floor. She fell on her right side and was unable to get up again. On admission she was sent at once to the X ray department, and a radiogram showed a fracture of the femur, just below the trochanter (see Plate, fig. I.).

Six weeks later she was discharged from the hospital wearing a Thomas's splint. A radiogram was taken just before her departure (fig. II.), and showed the deformity corrected, and the position good. It also showed pronounced rarefaction of the bone in the neighbourhood of the fracture. The significance of this appearance was not grasped at the time.

On Oct. 26th, rather more than three months after her discharge, she was readmitted, as it was obvious that no progress was being made. A further radiogram (fig. III.) showed a worm-eaten appearance of the whole of the upper end of the femur except the head. The history was then gone into afresh, and it transpired that the patient had suffered from breast cancer, and a radical removal of the left breast had been carried out in 1925. The nature of the condition was now clear, and it was decided to try deep X ray therapy. Her first treatment was given on Nov. 5th, 1928, and she had various courses until July, 1929. On this date an examination with X rays was made, and the report was as follows: "There is very definite consolidation; the fracture due to the metastatic invasion appears to have united." After this the patient began to walk with crutches. By January of this year she had discarded these in favour of a walking-stick. A final radiogram (fig. IV.) showed complete consolidation in good position, with "Shenton's curve" almost restored to normal (see figs. III. and IV.).

Points especially worth noting in this case are:—

(1) As is so often the case in pathological fractures, there was no violence in the ordinary acceptance of the term. Where an injury to bone appears to be disproportionately large, relatively to the apparent force used, it is wise to bear in mind the possibility of pathological fracture. Even had the story of the breast operation been elicited on admission, I do not think that pathological fracture could have been definitely diagnosed from the first radiogram (fig. I.). But such a history, in conjunction with fig. II., could scarcely have failed to raise the question. The surgical and radiographic departments (the latter my own) must share whatever blame the righteous may apportion.

(2) Despite the fact that the metastatic growth was allowed to progress unchecked for five months after the fracture, it proved possible to bring about sound union with a good functional result within a year's time. It is reasonable to suppose that an immediate diagnosis, followed by similar treatment, would have effected a cure in a few months—that is to say, the patient lost a year of active life.

(3) It is impossible to say, as yet, what proportion of fractures due to metastatic growths will unite under deep X ray treatment. In no case, however, should the patient be denied the chance of benefit. To adopt a *laissez-faire* attitude, on the ground that nothing matters much because the patient's days are in any case numbered, is quite unjustifiable. The occurrence of a metastatic deposit in a long bone is by no means an immediate death-warrant. At the time of writing (Oct. 13th, 1930) the patient described is in good health, has discarded her stick, and says that, if necessary, she can run a short distance. As she is the mother of a young family, every year that can be added to her active life is of great value. Better still than treating pathological fractures is to forestall them. The presence of metastatic growth is sometimes indicated by aching of the limb, and an X ray examination should be made of the pelvis and femur in all patients who make any complaint of sciatica or rheumatism after operations for cancer. A certain number will be found to be suffering from malignant invasion of bone, and it may prove possible to effect a local cure.

In conclusion, I should like to lay stress on the fact that the healing rate of a pathological fracture, no less than of an ordinary one, may be affected by constitutional factors. A patient in a poor state of general health has less resistance to cancer, as to other diseases. All means which assist in "building up the system" should therefore be employed, and amongst these treatment by ultra-violet light occupies a very important place.

A CONTINUOUS "EVERSION" STITCH.

By Arthur Edmunds, C.B., M.S. Lond., F.R.C.S. Eng.,
Surgeon to King's College Hospital.

Some years ago I introduced a suture which, after drawing the deeper parts of the wound together, also passed through its extreme edges. The object of this was to prevent inversion and secure an accurate adjustment of the cut surfaces.

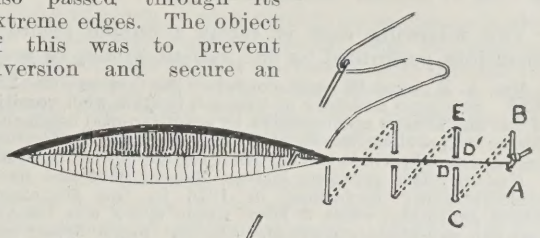


Fig. 1.

The following is a description of a modification of this stitch. It is a continuous suture, and can be inserted quite easily and quickly. The method of doing this will be readily understood by studying the figures.

The suture is commenced at the right hand of the incision by putting in a stitch which takes up very little tissue. This is tied lightly, and the short end cut or clamped (Fig. 1, A). The needle is then inserted at B and passed obliquely to the left, emerging at C about half an inch further along the wound. The stitch is then passed at right angles to the wound, picking up the extreme edges of the divided skin at D D'. The needle enters the tissues again at E and is passed obliquely to the left as before until the wound is closed. The thread is then fastened off with a lightly tied stitch, similar to that with which the suturing commenced.

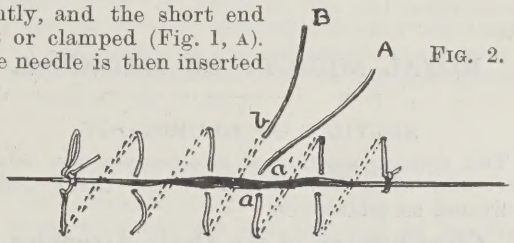
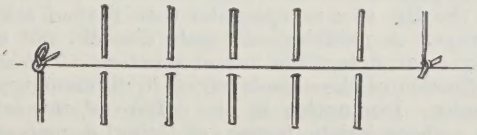


Fig. 2.

If a fresh thread is needed the needle is unthreaded after it has passed through the extreme edges of the wound, and the second thread started by passing it obliquely and to the left. In the diagram (Fig. 2) the first thread A is shown emerging at *a a'*, and the second thread B entering at *b*. Sewing with this second thread is then carried on until the wound is closed. The suture is then finished off as before.

Fig. 3.



The two loose ends of the threads A and B are then tied together, any adjustment of the tension being made at the same time. If the edges of the

wound are everted and not in apposition they can easily be adjusted with a swab or a pair of forceps, and when this has been done they remain in position. Fig. 3 shows the appearance of the suture line when completed.

A UNIQUE SURGICAL RECORD.

By R. G. Clements, M.D.R.U.I., F.R.C.S.E.

The following case is surely a unique record of operations performed on one patient within 14 years.

Mrs. A. B., aged 43 years, consulted me first on June 21st, 1922. She gave a history of stomach trouble with vomiting of bile and always accompanied by severe frontal headaches; during the previous four months she had uterine hæmorrhage, her menstrual periods having been regular up to that time.

History.—Her previous history showed that she had a cholecystotomy performed in 1916 in the Manchester Royal Infirmary, when a large single stone was removed and the gall-bladder drained. She felt much better after the operation until 1918, when she had a return of gastric pain. This was diagnosed as a duodenal ulcer for which a posterior gastro-enterostomy was performed. No benefit resulted from this operation. I found her markedly tender over the gall-bladder and pyloric region, and on vaginal examination she was found to have a typical malignant cervix. I recommended immediate operation and performed a hysterectomy (Wertheim) on June 26th, 1922. She unfortunately developed a vesicovaginal fistula which was repaired by me without difficulty in August, 1922.

In April, 1923, I performed an appendicectomy for an acute attack.

In January, 1924, she showed signs of bladder trouble, suffering from frequency of micturition accompanied by severe pain; this was due to calculi, and for the condition she was operated on in Salford Royal Hospital in January and November of that year.

For two years she was free from any bladder symptoms although the gastric symptoms still persisted.

In January, 1927, her bladder symptoms returned in a more aggravated form, and it was found that she had a small sac connected with the base of the bladder. She was operated on for this in St. Peter's Hospital, London, in June, 1927; since that date she has shown no further bladder trouble.

During all these years she was never free from abdominal pain, vomiting, headaches, and a feeling of fullness in the upper abdomen. I was called to see her on the evening of June 27th, 1930, and found her in a typical attack of biliary colic. Her general condition was not good; I gave her morphia. Her gastric symptoms for the previous six months had almost become unbearable, and at the patient's and her husband's request I was urged to undertake another operation. On June 30th, 1930, I performed a cholecystectomy, removing the gall-bladder with 20 stones, and undid the gastro-enterostomy. She had an uneventful recovery. To-day she is perfectly well, and for the first time in 28 years is free from any symptoms. She looks, eats, and sleeps well.

Manchester.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE.

SECTION OF NEUROLOGY.

The opening meeting of this Section was held on Oct. 9th, when Mr. Leslie Paton, the President, delivered an address on

Classification of the Optic Atrophies.

He said that optic atrophy was essentially a degeneration of the nerve-fibres, with consequent loss of function. It showed itself clinically as an increasing pallor of the optic disc, though the appearance varied greatly with the character of the atrophy. Varied also was the loss of function, for visual acuity might be markedly reduced with good peripheral fields, or there might be good central acuity with much peripheral restriction. Colour fields were sometimes affected more than the white, and the power of light and dark adaptation might be diminished or slowed down. Variations of visual field were valuable in determining the cause of the atrophy. The disc of an old person was usually paler than that of a child, and the disc of a myope paler than that of a hypermetrope. A pathologically pale disc did not necessarily mean detectable loss of function. The extent of affection of the vessels varied in different types of atrophy. Diminution in the calibre of the arteries was a characteristic feature of retinal degenerations, while in tabes the calibre might be apparently normal. Attempts to attain great simplicity in classification of the atrophies could only be harmful. A perfect system should be completely inclusive and exclusive; it should include all cases in one or other of its subdivisions, and each case should be embraced in one subdivision and excluded from all the others—this last condition was impossible to satisfy. The classification must strive to indicate the relation of one form to another. There must be a continual readjustment of labels as the knowledge of conditions became more intimate.

OBJECTIONS TO THE TERMS "PRIMARY" AND "SECONDARY."

Nothing could be more misleading than the use of "primary" and "secondary" as commonly applied to cases of optic atrophy. Primary should be applied to an atrophy of the optic nerve in which the toxin or the trauma acted directly on the nerve-fibre and killed it; and, similarly, a secondary atrophy would be that form in which the death of the nerve-fibre was a consequence of inflammation or degeneration of other structures on which the nerve was dependent. These meanings, however, were far from those given in the text-books. True primary atrophies were probably limited in number. The books stated that a secondary or consecutive atrophy was one in which the optic disc showed evidence of an antecedent œdema or papillitis; but cases were seen in which, after the subsidence, no trace of the preceding œdema remained, or in which the disc exactly resembled that of a so-called primary atrophy—i.e., it had clear edges, undisturbed retinal pigment, and a lamina cribrosa showing in the physiological pit. He would have the terms "primary" and "secondary" entirely abolished from books dealing with optic atrophy.

A BETTER CLASSIFICATION.

Being a tract of the central nervous system the optic nerve suffered the same pathological changes as other white tracts; thus it might take part in systemic degenerations whose cause remained unknown. The effect of various causes was modified by the different anatomical relationships of the nerve in the several parts of its course. A patch of disseminated sclerosis might affect any portion of the nerve where there was a myelin sheath, and if the anterior part of the nerve was affected the result

might be œdema of the papilla. Certain toxins affected the nerve diffusely; probably the aryl-arsonates did so. The first basis of classification should be into (1) atrophies of localised origin, (2) those of diffuse or indeterminate origin, (3) those of unknown origin. Most cases belonged to the first category, so that one's concern was mainly with its subdivisions. The main bulk of cells from which the fibres of the optic nerve arose lay in the retina, so that most (not all) the fibres were ascending. Some descending fibres might possibly be concerned with dark adaptation. The optic nerve could conveniently be divided into three parts—the retinal, the papillary, and the retrobulbar—the last being further divisible into orbital, foraminal, and intracranial. Any of these portions might be the seat of the primary lesion. There could thus be three main classes of optic atrophy of localised origin: retinal, papillary, and retrobulbar. In each of the main divisions atrophy might be the after-effect of inflammation or degeneration, and these might be locally produced, as by pressure or tractions, or might be systemic degenerations of unknown origin or due to vascular insufficiency. The inflammations might be either parenchymatous or interstitial.

Retinitis pigmentosa was a familial disease not infrequently associated with a familial form of inner ear or nerve deafness; occasionally associated with it was a family history of epilepsy. A close relationship was now recognised between amaurotic family idiocy and cerebromacular degeneration.

PAPILLARY ATROPHIES.

In a group of cases the initial damage to the nerve-fibres was at the disc itself; into this category came the atrophies due to glaucoma, those following papillitis and papillœdema, and a rarer group in which a cavernous degeneration of the disc tissues occurred in high myopes. There were two main causes of the atrophy in papillœdema. In the early stages the nerve-fibres were unaffected, and there was no functional loss; but in process of time the nerve-fibres lying in the œdematous fluid began to swell and to show moniliform varicosities. In the third stage the increasing neurological proliferation in the disc replaced the degenerate fibres, and in contracting it squeezed and killed the nerve-fibres which were left intact. In glaucoma the nerve-fibres were mainly destroyed at the disc as the result of the increased intra-ocular pressure.

ATROPHY CONSEQUENT ON RETROBULBAR LESIONS.

This group embraced the largest number of cases, and was subdivisible into (*a*) orbital, (*b*) foraminal, (*c*) intracranial. Though some of the inflammations might occur in any part of the nerve, or might affect the whole chiasma, from chiasma to bulb, papillitis was only an optic neuritis in which the anterior part of the nerve after the entry of the blood-vessels was affected. An inflammation might attack the parenchyma of the nerve directly, or might invade it from the periphery through its meningeal coverings and its interstitial fibrous structure. It might be the result of any form of meningitis, acute or chronic, septic, tuberculous, or syphilitic, and the atrophy resulting might be either complete or partial. The commonest form of parenchymatous inflammation was associated with disseminated sclerosis.

The speaker next referred to the optic atrophy which occurred during ophthalmic herpes. He was unable to throw light, he said, on the pathogenesis of the optic atrophy in these cases. During the acute stage of the herpes the eye was not in a condition which allowed of proper examination of the fundus, so the cases were not usually seen until the atrophy was obvious. He did not think the inflammation could have spread from the Gasserian ganglion to the intracranial portion of the nerve. Among the other lesions acting on the orbital part of the nerve were tumours, which might be either intraneural or extraneural.

The lesions acting on the optic foramen formed an interesting group of cases giving rise to optic atrophy The cause most frequently acting here was trauma, but this need not imply a fracture passing through the optic foramen, for even when there was a basal fracture the optic foramen was sometimes not involved. It was not settled whether the optic atrophy in oxycephaly was a result of the narrowing of the optic foramen, or whether the optic atrophy and the deformity of the skull might not be coincidental results of early meningitis. But in Paget's disease the bony thickening, reducing the calibre of the optic foramen, was the cause of the atrophy.

Dealing next with lesions of the intracranial portion of the nerve, the President said that here one had to deal with a different set of factors. Disseminated sclerosis must still be regarded as an important cause, the patch often being found to affect the chiasma and both nerves. Lastly, he asked into what division tabetic atrophy should be placed, and gave his own contribution, in detail, to a much vexed question. The primary mode of attack was interstitial, but at times it was parenchymatous. Only the pathological investigation of a large series of very early tabetics, and the careful correlation of the pathological findings with the clinical history, could elucidate the facts.

UNITED SERVICES SECTION.

AT the opening meeting of this Section on Oct. 13th, the presidential address was delivered by Surgeon-Captain S. F. DUDLEY R.N., who dealt with some

Psychological Aspects of Specialism

in the Services. Ashore, he said, where a team of practitioners could be supported by a local population, specialisation worked satisfactorily, but afloat a general practitioner was still required. Medicine was becoming more a science and less an art, and treatment more rational and less empirical. The old pose of competent omnipotence was giving way to the diffident attitude of the student of nature. Between the purely curative and the purely research attitude there must be a difference of attitude and outlook. Telling the literal truth to patients was incompatible with sound therapeutics, although in the Services the doctor could be more honest than could the local practitioner. The only remedy helpful in every malady was confidence in the doctor. The standard of truth rigorously attained by men of science was a very high one; nevertheless the plasticity of the human mind was such that it was possible to some extent to blend the two attitudes in one man, just as it was possible to blend the diverse attitudes of the hen-pecked martinet on the quarter-deck and in his wife's boudoir. The essential critical attitude of the scientific worker was apt to hamper his practical work if he worked in both branches of medicine. Many first-class practitioners remained in the same credulous state as in their student days, and their patients were the better for it. The eternal scientific question-mark was absent from many minds, and

many doctors were consciously honest while they unconsciously deceived themselves.

Specialisation was the essential corollary of evolution and had both advantages and disadvantages. To-day the specialist specialised too early and took too superior an attitude to the more widely read general practitioner. Friction between the groups might hinder progress as well as promoting it by friendly rivalry. Early specialisation might even promote a sort of pride in ignorance of other branches. These little failings could be winked at ashore, but were less tolerable in the Navy. There were not enough special cases to maintain many specialists, and the Navy could therefore insist on a certain degree of general proficiency together with specialism. It was an excellent rule that a man must see service afloat before promotion. The naval specialist must be familiar at first hand with such conditions of life as existed in submarines and 16-inch gun turrets, as well as those in the *Victory* and the ark. Analytical psychology showed that specialism formed a complex which widely affected a man's conduct in many aspects of life; the general practitioner recognised this when he feared to send his case of housemaid's knee to a surgeon lest she return without her tonsils. Nor were psycho-analysts themselves quite free from this complex. A well-known psycho-analyst had explained sea-sickness as a repression of an infantile recollection of the rise and fall of the mother's breast. Surgeon-Captain Dudley candidly did not feel that this hypothesis was based on so firm a foundation that bottle-fed recruits should be accepted in preference to their breast-fed fellows.

THE "AMATEUR" RESEARCH WORKER.

Poor remuneration was a great hardship to the laboratory worker, but he had the consolation of knowing that he spent his life doing the work he liked best. The Services offered one of the finest fields for the research worker; he should look on his research as a hobby and not expect reward for it, and he must put his service duties first. On the whole, the rewards of research in the Services were greater than those outside. In a modern ship of war a man with a little resource and application could carry out valuable laboratory investigations at sea. There were, moreover, vast fields of research in such subjects as the food, clothing, hygiene, and psychology of the men, and in administration. He could publish or not as he liked, but his own journals were always eager for copy. Research was a more absorbing hobby at sea than cross-word puzzles or poker. If something useful emerged from the pastime, so much the better, but that was not the main object for the amateur research worker. Nevertheless many question sought answers—e.g., What was the real incidence of toe-rot? What was the best way of airing bedding during a spell of continuous bad weather? Why were sailors so attached to patent medicines, and did this habit do them any harm? What were the psychological factors underlying a "happy" and an "unhappy" ship? What was the best way for an ordinary medical officer to deal with a surgical emergency on the high seas without expert help?

AUTHORITY IN MEDICINE.

Experimental work on animals had proved of the greatest value to clinical medicine; the observational method had received a new impetus. In discussing a subject it was useless to say that Prof. Highbrow had given such an opinion without saying why he said it, or giving the reference to his original paper, so that the reader could look up the argument for himself. If the "amateur" research worker published his work he must do so in proper form. Hero-worship was a great element in social life, but just for this reason it must be carefully watched in scientific work. The average modern worker approached his subject with greater caution than did the ancients just because he realised his ignorance to a far greater extent than his forefathers had. Much valuable work had been done in the editing of old text-books and finding out how many of their statements were really correct. As Sherlock Holmes had said, "It is a capital offence to theorise before one has data."

NEW REMEDIES AND AMBIGUOUS WORDS.

An important part of research work and one peculiarly liable to the post hoc fallacy was the testing of modern therapeutic agents. Trotter regarded this fallacy as a kind of conditioned reflex; any cause was better than none, and if the real cause were inacceptable or not evident any striking event was supplied to relieve the acute mental agony of not knowing why. There was only one reliable method of testing any new treatment and that was to treat alternate admissions without any selection whatever until a sufficient series had been collected and the data carefully examined. The smaller the differences the greater the number of cases required to establish them. A scientific attitude of masterly inactivity was hard to maintain in face of the patient's and relative's sufferings, and more patients were over-treated than under-treated.

Words and phrases could often be different and mean the same thing, and vice versa. There must be no ambiguity of meaning if medicine was to advance. The Services could insist on more honest diagnosis than other branches of practice, and might surely allow "I do not know." The category of "P.U.O." had much to recommend it; it was honest and did not confuse the work of the statistician. The doctor could at least be honest on official sick returns, if not to his patients. Words like "typhoid" and "virulence" often meant different things to different writers; when words of this kind had to be used they should be carefully defined. It was extremely difficult to convey the exact shade of meaning that an author wanted to attach to the phrases he used. Original papers—not abstracts—must be studied, for they usually conveyed a slightly different meaning.

The seeker after truth should always put to himself a short catechism when he was confronted with any statement to which he was not personally indifferent—"Do I believe or disbelieve this thing, either because I want to, or because it is the custom of my herd and my heroes to do so, or because of an uncontrolled post hoc argument, or because I have misunderstood the author?" In this way he could greatly, though never completely, reduce the subconscious bias that swayed all our thoughts and actions. These remarks concerned only science; how far it was possible to carry their principle into daily life the speaker did not pretend to know. As regards everyday life he would take the advice of King Solomon: "Be not righteous overmuch, neither make thyself overwise; why shouldst thou destroy thyself?"

A HOSPITAL FOR DOWNHAM, KENT.—It is proposed to build a hospital of 50 beds at a cost of £28,000 in this thickly populated district of working-class homes. The population of Downham is 36,000, of whom 20,000 are children, and the neighbouring hospitals are constantly overcrowded.

RADIUM COMMISSION.

FIRST ANNUAL REPORT.[1]

THE period covered by the first annual report of the Radium Commission, dated August 31st, 1930, is nearly a year, since the Commission started work on Sept. 26th, 1929. It is recorded that the first decisions of the Commission were to accept the offer of the loan of a four-gramme "bomb" for a period of three months, free of charge; and to entrust this "bomb," provisionally, to the Westminster Hospital to carry out a special programme of radium therapy suggested by the Commission. Moreover, the first 5 grammes of radium were ordered and placed in containers in anticipation of the requirements of national centres. The Commission then addressed itself to the task of framing and creating a national organisation, with the primary objectives of (*a*) "treatment of the sick" as prescribed by the Royal Charter, and (*b*) the evaluation of radium in the treatment of cancer as determined by results over a period of years. To this end it was decided to concentrate the available radium at 12 national centres outside London, and in London to combine a centre for treatment with a post-graduate school of radiotherapy for the service of the whole country. The selected centres were required to furnish detailed replies to two questionaires prepared by the Commission—No. I. dealing with the staffing, organisation, equipment, and experience in radium therapy of the hospital nominated; and No. II. with the methods of technique in radium therapy proposed to be followed. The centres were also asked to formulate and submit a schedule of their requirements, and were urged to avoid abnormal demands, to adopt proved methods of technique, and where possible to bring patients to fully equipped clinics rather than to take radium to the patients.

Rental charges are made for radium loaned to centres in order to avoid drawing upon the capital of the National Radium Fund to defray administrative or overhead expenses, and to preserve undiminished the sum of money available for the purchase of radium. The Commission expresses the belief that this policy will commend itself to Parliament and the public, even though it may not always be welcomed by the financial authorities of the centres concerned. The rate of rental at present fixed—i.e., 2 per cent. per annum of the capital value of the radium and containers—is provisional and is subject to revision. It is not, of course, desired to make any financial profit from the loan of national radium.

Radium Supply.—A total of 18½ grammes has been ordered by the Radium Trust. Of this amount some 18 grammes have been provisionally allocated to national centres, and it is hoped that the whole of this amount will be in full clinical use by the end of 1930. At the end of August 14 grammes had been received from the manufacturers and 8 grammes had been actually delivered to centres.

Outside Demands for Radium.—The Commission has received many applications for grants of radium from institutions throughout the country. Even if an unlimited stock of radium had been available, the Commission hold that, in the present state of knowledge of radiotherapy, an indiscriminate or even a wider distribution of national radium would be undesirable. The dangers, both to operator and patient, attendant on the use of this new and potent weapon are not only real and serious but there is much popular misconception (extending sometimes even to the medical profession) with regard to the efficacy of radium and the technical difficulties of its clinical use.

Inability to meet demands for radium does not, however, signify any lack of sympathy on the part of the Commission with non-selected hospitals which are adequately equipped and staffed to undertake, and which are anxious to practise, radiotherapy. They have been urged to comply with the rules and precautions for the use of radium adopted by national centres, and to make use of the national forms of clinical case records (of which specimens are given in this report) in order that statistics may be based upon as wide an experience as possible.

A NATIONAL POST-GRADUATE SCHOOL.

Since the need of practitioners fully qualified to practise radiotherapy is urgent, the Commission drew up a scheme for the creation of a post-graduate school of radiotherapy. They suggested the coöperation of the Mount Vernon Hospital at Northwood, Middlesex, which had recently decided to devote its energies to the study and treatment of cancer, with the Radium Institute in Portland-place, London, in the establishment of such a school, and eventually a joint scheme was worked out. Under a scheme prepared by the Director of Medical Services of the Hospital and Institute (Sir Cuthbert Wallace), the main clinical and pathological work of the joint institution will be carried out at Mount Vernon, whilst the diagnostic and out-patient department, with a proportion of the surface therapy work, will be centred at the Radium Institute, which will also become the Commission's principal centre for the supply of radon (radium emanation). Three grammes of national radium is being allocated to Mount Vernon Hospital for clinical work, and 1 gramme to the Radium Institute for radon. The post-graduate school is being inaugurated this autumn (October, 1930).

The Commission note that satisfactory coöperation has been established with other bodies, notably the Medical Research Council, King Edward's Hospital Fund for London, the British Empire Cancer Campaign, the Cancer Commission of the League of Nations, and the National Physical Laboratory.

TECHNIQUE OF RADIUM THERAPY.

Although much experimental work is being conducted in many countries, it cannot be claimed that the methods of technique have yet become standardised or are incapable of improvement. It is therefore the policy of the Commission to encourage and try out all approved methods, as well as those which, in the judgment of its advisers, afford good promise of success. At present there are four main techniques:—

(1) The use of *radium in containers* (i.e., needles, tubes, &c.) which are inserted surgically into the diseased tissues or placed in natural cavities of the body.

(2) *Surface therapy*, the radium containers being placed in external contact with the body or very close to it.

(3) *Distance radium therapy* (or mass irradiation) by means of a "bomb" containing a large quantity of radium, which is placed at a distance of some inches from the body.

(4) *Radon therapy.* Similar to No. (1) except that, instead of radium being used, "radon" (i.e., the gas emanating from it) is collected and sealed in small tubes or "seeds" which are inserted in the tissues.

The Commission has arranged that all national centres shall be equipped to practise methods (1) and (2); that some of them (five at present) shall in addition be equipped for the production of radon, and *one* hospital (Westminster) shall be specially charged to try out No. (3). This position is subject to modification as and when further experience indicates the desirability of introducing new methods

[1] H.M. Stationery Office, 1930, Cmd. 3678. 1*s.* 3*d.*

or possibly discarding others which are already in use.

The *Westminster "Bomb."*—The four-gramme "bomb," originally on loan, was purchased. This "bomb" was acquired in order to enable the Commission to try out the method of "distance radium therapy," or "mass irradiation," which has been practised for some time past in other countries (with undetermined results), and which, if proved successful, might, in many cases, obviate the need for surgical interference. It is too soon to formulate or publish any considered conclusions. As at present advised, however, the Commission is of opinion that the experience so far gained is not sufficiently encouraging to justify the acquisition of any more large "bombs" at the present time.

Appendices.

The report contains, as appendices: (1) a balance sheet; (2) a specimen of agreement with national radium centres; (3) a summary of the present stage of development of the 12 national radium centres; (4) a reprint of memorandum published by the Commission in November, 1929, deprecating extravagant claims for the healing properties of radium, and setting out a considered view of the true position; (5) specimen "national radium forms" for case-records of malignant disease affecting various regions of the body, with reproductions of the charts devised by Prof. Regaud; (6) a memorandum on the policy to be adopted by the Commission towards hospitals or medical groups (other than the national radium centres) who may apply for advice, guidance, or loan of radium; (7) a memorandum furnished to the National Radium Commission on the relation between the Mount Vernon Hospital and the Radium Institute; (8) a note on the care and custody of radium; (9) a memorandum on radon departments at national centres.

Conclusion.

The Commission again emphasise that great caution is necessary in estimating the value and efficacy of radium in the treatment of malignant disease and they strongly deprecate the creation of false hopes by means of sensational, or even optimistic, statements. As a result of world experience, extending now over many years, the best that can be said is that some results, under certain conditions, are very satisfactory; that others, for no clearly established reasons, are less so, and that in a considerable proportion of cases the results are either inconclusive or definitely disappointing. They hold that this does not justify a pessimistic outlook, as many problems which yet remain unsolved may yield to experience and research. But time is an essential condition of success and it can only be after several years of pioneer work that there can be a sufficient supply of statistical and scientific data to enable positive conclusions to be reached and published to the world. The Commission have therefore made it their first duty to organise a concentrated and controlled national radium service, with a definite and coördinated programme which will be carried out at selected centres under the supervision of recognised experts, and of which the progress and results will be recorded on a uniform system. By this means the treatment of the sick, which is enjoined in the Royal Charter, will proceed pari passu with the advancement of knowledge of the best methods of radium therapy, whilst due economy will be secured in the utilisation of the limited stock of national radium.

Finally, the Commission repeat their warning that radium is not yet established as a "cure" for cancer; that whilst it holds out a good promise of beneficial results, and certainly of alleviation of suffering, it is at present a very dangerous weapon and one which unless used with the greatest skill, care, and precaution may easily be productive of more harm than good. This is the Commission's considered opinion, as the result of its first year's work, but it is noted that at least five years of further experience and coördinated research will probably be required before any final verdict can be anticipated.

REVIEWS AND NOTICES OF BOOKS

Cancer of the Larynx.

By Sir StClair Thomson, M.D., F.R.C.S., F.R.C.P., Emeritus Professor of Laryngology in King's College Hospital; and Lionel Colledge, M.B., F.R.C.S., Surgeon to the Throat Department, St. George's Hospital. London: Kegan Paul, Trench, Trübner and Co.; Anglo-French Library of Medical and Biological Science. 1930. Pp. 244. 25*s*.

The treatment of cancers of the throat has made considerable progress during the last decade and this careful and up-to-date exposition by two of the surgeons who have taken a leading part in this advance is opportune. The greater part of the book is occupied by the discussion of operative treatment, but a later chapter deals with treatment by radium and X rays. This chapter is largely a record of disappointments, but some of the unfavourable opinions quoted date from the earlier part of the decade; somewhat better results, which are also quoted, have been obtained during the last two or three years, and it should be remembered that the early results of surgical treatment were also very discouraging. The authors do well to point out that radiation cannot be advised indiscriminately for inoperable cases on the ground that it may do good and will do no harm, for it is quite as likely to aggravate the symptoms as to give relief in the cases under discussion.

The earlier chapters are concerned with pathology, symptoms, and diagnosis; Sir StClair Thomson's long experience gives great value to this part of the book. In the diagnosis of post-cricoid cancer the difficulty of inspecting this region is noted, together with the risk of damage by an œsophagoscope; the value of palpation through the mouth is mentioned, but not von Eicken's method of inspection, aided by pulling forward the larynx with a probe in the anterior commissure; this procedure is easy, causes no damage or discomfort, and often affords a good view of the hypopharynx. The authors' advice that there is no need to be in haste to settle a diagnosis, if there is insufficient evidence, is only safe if it is confined, as they intend, to genuinely early cases where neither extremity of the cord nor the subglottic region is invaded; otherwise any long delay may well end in disaster.

A clear and complete discussion of the operations of laryngofissure and laryngectomy occupy about

one-half of the book. In the former operation the authors advise excision of the greater part of the ala of the thyroid cartilage, freed from the perichondrium on both faces, before the actual removal of the growth; they claim that this step does not produce stenosis, that it affords better access, and that healing takes place more rapidly than over a surface of denuded cartilage. In laryngectomy they prefer the method of Gluck, removing the organ from above downwards, and give good reasons for their preference; they take out the feeding-tube after 12 or 24 hours and introduce it afresh for each feed. The lateral pharyngotomy operation, as developed by Wilfred Trotter for the extirpation of growths situated on the upper aperture of the larynx and in the post-cricoid region, is described, as also is his median translingual operation which gives access to the epiglottis and base of the tongue; subhyoid pharyngotomy offers a less free approach and is only advisable for strictly limited epiglottic tumours. The modern operation by laryngofissure approximates in extent to hemi-laryngectomy, and other methods of partial and hemi-laryngectomy, such as that recently devised by Hautant and Ombrédanne,[1] are therefore not described. It is clear that the recent improvement in the results of the surgical treatment of malignant disease of the larynx is to a great extent due to the limitation of the operation to suitable cases. Most surgeons now limit laryngectomy to intrinsic cases, and the indications for laryngofissure are strictly defined. The authors' remarks on the indications for various types of operation are, therefore, of particular interest; all will agree that a surgeon should not allow himself to be forced into operating on unsuitable cases on the plea that the disease is invariably fatal.

The book is an important addition to the literature of this specialty, and should be in the hands of all laryngologists.

Visceroptosis

and allied Abdominal Conditions associated with Chronic Invalidism.

By H. BEDINGFIELD, D.S.O., M.D., Ch.B., M.R.C.P. London: Humphrey Milford, Oxford University Press. 1930. Pp. 176. 10*s.* 6*d.*

Dr. Bedingfield has earned our thanks by collecting and analysing modern work on visceroptosis. In addition to reviewing the extensive literature and critically examining the various theories propounded, the author has drawn on his own wide clinical experience. The book opens with a description of the clinical picture, drawn from various writers. Though Burton had described "flatuous melancholy" in 1621, and though anatomists had long recognised variations in shape and position of the abdominal viscera, a dislocated kidney being noted by Pedemontanus as early as 1589, it remained for Glénard, in 1885, to suggest that prolapse of the abdominal viscera was intimately connected with symptoms, both local and general. This writer has exercised so great an influence on our conception of enteroptosis, as he termed it, that Bedingfield has divided his historical review into three eras, pre-Glénard, Glénard 1885–1899, and post-Glénard. Glénard's views, particularly his change of front from a cause purely mechanical to one due to deranged hepatic function, are concisely set out as are those of other writers on ætiology. In the present century investigation has followed three main lines: radiological, anthropological, and surgical. The results thus obtained are discussed fully, so that many untenable positions are revealed in the purely mechanistic theories.

After reviewing briefly our present knowledge of the motor functions of the gastro-intestinal tract, the author considers the various physiological theories that have been put forward as the cause of the symptoms which may follow visceroptosis. The confusion that followed Bouchard's introduction in 1887 of the term auto-intoxication is well described, and Mr. Bedingfield concludes that "the persistence of the idea that poisonous substances were formed in the intestine and absorbed into the body from there, despite repeated failure to demonstrate their existence, suggests an emotional rather than a scientific state of mind." He then examines the relationship between physical symptoms, mental reaction, and constitutional make-up, and analyses his own series of cases from this point of view. Two types of mental reaction are described, the fictitiously cheerful and the querulously introspective, and the mental make-up is regarded by Bedingfield as of the greatest diagnostic importance; in this connexion he stresses the great importance of a careful clinical history. Surgical intervention he regards as disastrous; "as a method of treatment it is useless; as a method of diagnosis it is criminal." These are strong words many will support. Treatment is essentially preventive, but sensible therapeutic measures are laid down for use when the condition is once established.

This monograph is sane, well reasoned, and moderately expressed, and makes a genuine contribution to our knowledge on a difficult and ever-present problem. As Dr. Robert Hutchison says in his foreword, it is "of real value both to the student of pathology and to the practitioner."

A Compilation of Culture Media.

By MAX LEVINE, Ph.D., Professor of Sanitary and Technical Bacteriology; Bacteriologist, Iowa Engineering Experiment Station; and H. W SCHOENLEIN, M.S., formerly Fellow in the Department of Bacteriology, Iowa State College. Prepared at the request of the Society of American Bacteriologists and financed by a grant from the Digestive Ferments Company, Detroit, Michigan. London: Baillière, Tindall and Cox. 1930. Pp. 969. 67*s.* 6*d.*

THIS book is of a type likely to become common in the future with the evolution of the ancillaries of medicine. It has nearly a thousand pages devoted solely and soullessly to concentrated abstracts of recipes for culture media. It has been produced, we gather, at the request of the Society of American Bacteriologists and prepared in the Department of Bacteriology of the Iowa State College. Invaluable as such a mountainous compilation must be, as a work of ready reference, it impresses us even more as a commentary upon the unwieldly growth of scientific publications and the associated reverence for literature. To look at such a book is to realise, on the one hand, the difficulty, which will soon amount to impossibility, of consulting original sources, and the need for the abstractor and the compiler as cogs in the complex machinery from which comes an increasing and unceasing supply of scientific papers. On the other hand, a book of this type shows also the relative inutility of this mass of publication and the hampering effect it imposes on the diffusion of real knowledge. Are 2543 varieties of culture media necessary for the adequate investigation of the known bacterial species? Whilst Prof. Levine and Mr. Schoenlein have no doubt done some service by collecting and recording

[1] THE LANCET, 1930, i., 1238.

the composition of all of these, would not their work have been doubly or trebly as useful, to say nothing of being infinitely more interesting and instructive to themselves, if they had critically examined only a proportion of these media, told us of their relative usefulness, and indicated which formula served best for a stated purpose? However, the request of the Society of American Bacteriologists, we may well believe, overrode any personal inclinations they may have had. The Digestive Ferments Company of Detroit, Michigan, played their part on the financial side, and together the team has produced a handsome and costly volume in the best style of the publishers.

The contents of the book have been indicated: besides the usual indices it also contains a Constituents Index which records the pages upon which certain substances are mentioned; thus we find that glucose is mentioned in some 450 and sodium chloride in some 550 different places. All this seems a waste of time and energy, but some bacteriologists, ignoring such superfluous matter, may find it convenient to have such a comprehensive list of media collected in one volume.

Les thérapeutiques nouvelles.

By GASTON LYON. Paris: Masson et Cie. Pp. 389. Fr.26.

THIS little volume is an attempt to review contemporary therapeutics and to lighten the task of those who wish to keep abreast of the changes and innovations that are taking place in medical treatment. The book is made up of 27 chapters and covers a wide field; the subjects are treated in a way that emphasises what is new and what is a new application of an old treatment. The subject matter is largely composed of summaries and in parts develops into mere lists of applications; but a critical attitude can be detected in some sections and is most welcome. In the chapter on chemical medicaments many drugs will be found which are little known to English readers, but a short account is given of such newer drugs as acetylcholine, ephedrine, ergotamine, quinidine, and phenylhydrazine. The chapters on physical agents make interesting reading, and may cause some surprise to English readers. Not all will agree that X rays are the treatment of choice for exophthalmic goitre, or that ultra-violet light is of real value in disseminated sclerosis, for which disease diathermy and X rays are also suggested. Other chapters include those upon psychotherapy, serum treatment, symptomatic and specific treatments, as well as sections upon individual systems.

For those who wish to obtain a general outlook upon present-day therapeutics from an unfamiliar angle this little book will make interesting reading.

Foundations of Mental Health.

By LEONARDO BIANCHI, late Professor of Nervous and Mental Diseases in the Royal University of Naples. London: D. Appleton and Co. 1930. Pp. 277. 10*s*. 6*d*.

THIS work is not a scientific text-book, but a series of essays by a psychiatrist of great attainments and long experience on the various social problems common to all countries. He deals at considerable length with mental hygiene; this chapter occupies more than a quarter of the book and is concerned chiefly with education. The chapter on alcoholism is exhaustive and impartial; it is well worth reading if only as a guide to the literature on the subject. His conclusion that alcohol, except in very small quantities, is a racial and individual poison is in line with that which most authorities seem to reach nowadays, but he is no advocate of legal prohibition. On sexual problems Prof. Bianchi is less helpful. The work is well translated, but is rather encumbered by generalities. Much of the author's idealism is bewildering, and the general impression left by the book is that the foundations of mental health are hardly on ground level. But Prof. Bianchi's vigorous insistence on the necessity for recognising and drastically dealing with parasitism of all sorts, from alcoholism to optimistic idleness, will be acceptable to many of his readers, and though all may not agree with his views none should be bored by their recital.

Recent Advances in Diseases of Children.

Second edition. By W. J. PEARSON, D.M., F.R.C.P., and W. G. WYLLIE, M.D., M.R.C.P. London: J. and A. Churchill. 1930. Pp. 548. 15*s*.

THE interest which this volume aroused when it appeared in 1928 will be maintained by the second edition. Numerous alterations and additions have been made; as a result of much condensation, especially of the more theoretical parts, the authors have been able to introduce a number of new sections which add to the completeness of the book, while its size is actually diminished. The theory which they propounded in the original edition was that children tend to deviate from the normal along two definite lines, resulting in the lymphatic, alkaline, hypocalcic type, and the acid, hypercalcic type. This theory is restated, but with some modifications in its applications to particular diseases. Cœliac disease and scurvy, for instance, are no longer included among the extensions of the lymphatic type, and throughout the book less emphasis is laid on the therapeutic effects of fruit and vegetable juices. Among the additions are short accounts of encephalomyelitis and of the treatment of chorea by nirvanol. The section on the pathogenesis of cerebral diplegia has been revised, and more recognition is given to intracerebral birth-hæmorrhage as a precursor of spastic paralyses. The chapter on respiratory disease contains numerous alterations, and the work of A. Ghon is included in the section on pulmonary tuberculosis; a new classification of asthma—into primary and bronchial types—is adopted.

The authors have used much skill in the preparation of the new edition, which will enhance the reputation of this work as an interesting combination of speculation and clinical observation.

Les artérites et les gangrènes par artérites.

By GEORGES SPEHL and EDGARD TYTGAT. Brussels: R. Fischlin. 1930. Pp. 43.

THIS is a summary of views on the pathology and treatment of gangrene due to arterial disease rather than an original contribution. Indeed, the authors do not support their statements by the citation of clinical cases and appear to have accepted the teaching of Leriche in his earlier period without reserve. They believe that peri-arterial sympathectomy will improve the circulation of the limb so much, when gangrene has already occurred, that lower amputations become possible. This is very difficult to prove or dispute from the experience of a single surgeon. They testify to the great value of Moschowitz's test in the selection of the amputation site.

THE LANCET.

LONDON: SATURDAY, OCTOBER 18, 1930.

LOCAL GOVERNMENT OFFICERS AND SECURITY OF TENURE.

In the House of Commons last session the Scottish Office representative answered a question as to the municipal and other local government officers in Scotland who enjoy security of tenure. The details of the reply indicated that medical officers of health and sanitary inspectors are by no means the only officials thus protected in Scotland. In England, where the confidence of many local authorities' servants must have been rudely shaken last year by the decision in Brown *v.* Dagenham Urban District Council, there has been a tendency to regard the medical officer of health as an exceptionally privileged person possessing an almost unique freedom from the risks of summary dismissal. His security of tenure, however, is, in England, neither absolute nor universal. Excellent so far as it goes, the Public Health (Officers) Act of 1921 does not apply to every medical officer of health, much less to every assistant officer. The position of part-time medical officers depends rather upon departmental than on Parliamentary enactment; Article 10 of the Sanitary Officers Order is somehow not so solidly reassuring as a section in a statute. Uncertainty of tenure will be inevitable in the reorganisation of services and the evolution of schemes consequent upon last year's Local Government Act. Above all, a contract with a local authority has proved a broken reed. Brown's case revealed the surprising fact that a local government officer, notwithstanding that he held a contract of service with his local authority, under which there was provision for three months' notice on either side, could be dismissed at pleasure by virtue of Section 189 of the Public Health Act of 1875. Naturally, this decision received attention in the Final Report of the Royal Commission on Local Government issued last year. The Commission recommended that all such contracts should be made valid and enforceable. A few months ago the Earl of Onslow pressed the Government to say when this and other recommendations in the Report were likely to receive legislative effect. He received a rather cautious reply from Lord Parmoor, and a similar question in the House of Commons elicited but little further encouragement.

There are two considerations here to which the Royal Commission gave expression. On the one hand, local government officers ought not to be harassed by insecurity, particularly where agreements exist which Brown's case has shown to be nugatory. On the other hand, there is no desire to encroach upon local autonomy or to increase the concentration of power in the central government. Where an officer is protected by the fact that he cannot be dismissed without the order or consent of the Ministry of Health, it must be recognised that his position is difficult if the local authority threatens him with dismissal and he is retained by direction of the central department. The Royal Commission refused on this account to recommend any extension of the right of appeal to the central department before dismissal. Lord Parmoor distinguished the cases (such as certain medical officers of health and sanitary officers) where part of the official's remuneration comes from central funds; in these cases he thought it right that there should be a right of appeal to the central authority. But neither Lord Parmoor nor the Royal Commission appear to have given as much weight as could have been wished to a third consideration—namely, that it is obviously undesirable that an officer should be deterred from carrying out his duties as the law prescribes through fear of incurring the displeasure of his council. This is a point of public, and not merely professional, importance. Its significance was apparent in the early stages of the struggle to obtain security of tenure for medical officers of health in Scotland when pioneers like the late Dr. Wallace, of Greenock, encountered almost single-handed the opposition of interests connected with building and property-owning. The fearless exposure of scandalous conditions a generation and more ago, and the strict enforcement of the minimum standards of public health laid down by Parliament, would hardly have been possible without protection from dismissal. Section 15 of the Public Health (Scotland) Act of 1897 seems to give a more solid and universal security to medical officers of health than the corresponding English enactments provide. Why should these officers be at less advantage in England?

THE STETHOSCOPE.

In choosing for the theme of his presidential address to the Medical Society of London the stethoscope, its origin, development, and values, Dr. R. A. Young went further than making a historical survey, for he pointed out, with appropriate divagations into philosophy, that all progress in human knowledge involves a readjustment of accepted views, so that always, at any present epoch, the problems exist of what to retain and what to discard, and how to correlate the old with the new. We publish the substance of the address, and readers will be in accord with its two fundamental messages; first, that to Auenbrugger and Laennec medicine owes the establishment of methods of physical examination of the sick which have lasted with but little modification since their possibilities were discovered, and which throughout that long period have proved of immense practical value; and, secondly, that the use of the stethoscope has not been rendered nugatory by recent work in the laboratory or

the X ray department. "Il attends pour regarder les monnaies, qu'elles sont devenues des médailles" was a witty Frenchman's criticism of an antiquarian; but it is in no antiquarian spirit that Dr. YOUNG speaks, for he regards the stethoscope as a current coin and not a medal.

The determination by the sense of hearing of the condition of certain internal organs was, as Dr. YOUNG pointed out, attempted, and attempted with some success by the earliest physicians; but we must remember that the information gleaned by them through auscultation was vitiated by ignorance, while their ideas of systematic anatomy were incorrect; for the uses of the organs of the body were hidden from them so that the detection of any alterations produced by disease conveyed little trustworthy teaching either as to cause or remedy. LAENNEC'S invention of the stethoscope, an event which is recorded by Dr. YOUNG with the interesting detail that it merits, immediately made much of the elaborate theorising and procedure of clinicians, not so much unnecessary as accessory. The powers of observation displayed by the historic leaders of medicine, from (say) HIPPOCRATES to HEBERDEN, have been a source of wonder to all who have studied their works in the original or who have followed the developments of their teachings as they are recorded in literature, and Dr. YOUNG'S address leads us not only to retain this feeling of admiration for historic wisdom, but to recognise that there is room to-day for similar intense investigation and acute reasoning, although clinical medicine has received through the stethoscope, and is now receiving through the application of X rays, such large and varied assistance. It is not respect for the training which the last four generations of doctors has received that renders the story of the stethoscope a sort of holy writ; it is as a symbol of progress that we should regard LAENNEC'S invention, for its present employment has multifarious uses, and these should not be overlooked because certain deductions founded upon stethoscopy have proved erroneous, while in important directions sounder information is now obtained by the use of X rays.

Some 60 years before LAENNEC published the Traité de l'Auscultation Médiate, which embodies the present methods of auscultatory examination, AUENBRUGGER had indicated, by describing the art of percussion in reference to diseases of the chest, the vast field of knowledge that lay literally under the hand of the doctor but which remained undiscovered. The knowledge of pathological processes conveyed by percussion was necessarily limited, but recognition through the ear of the relation between the sensations produced in the doctor by percussion and the presence of disease in the patient was already a part of medical equipment when the stethoscope was invented. On the conditions which can now be detected and separated from each other by the stethoscope there is no need to dilate, and to do so was no part of Dr. YOUNG'S intention. His text was larger than this, being a plea for the observance of continuity in clinical procedure, whereby the benefits of early investigation should not be lost to the world in the development of later medicine.

HEALTH AND ACTIVITY.

THE work carried out by the Industrial Health Research Board is designed to be utilitarian. The Board is not content to add to the sum of human knowledge in the abstract, but is anxious actually to oil the wheels of the world's progress, and therefore directs its efforts to revealing the influences governing healthy activity. Early in its career the Board showed that the working environment which makes for greatest productivity makes also for least sickness. Later, an intimate connexion was found to exist between the tendency to sustain accidents and to endure ill-health. Then came the demonstration that the best and most skilled workers are those who lose least time for sickness and have fewest accidents. Steadily a picture is being painted which portrays health and contentment as a corollary of physical and mental activity expended in economic and skilled productivity. If this picture seems to flatter the actual facts, and to represent a flourishing industrial concern in too glowing a light from the point of view of public health, it must be remembered that the studies which demonstrated this connexion between efficiency, freedom from accidents, contentment, and good health in workers were undertaken and pursued without prejudice and that the results were, especially as regards accidents, largely unexpected.

The tenth annual report of the Board, just issued,[1] is a short one, but records further advances, and tells of useful investigations still proceeding. The Board has been fortunate in obtaining the services of Sir DAVID MUNRO, till lately medical director of the Royal Air Force, to succeed its retiring secretary, Mr. D. R. WILSON. Mr. WILSON has been secretary to the Board since its inception and by his initiative, originality, and organising ability, has largely contributed to its success. Conclusions have been reached, indicating how improved illumination improves feeling-tone and output in the case of tile-pressing by 12 per cent. The effect of natural ultra-violet radiation on indoor workers is under observation. It has been proved that for work demanding discrimination of detail fine spectacles are of practical value to workers, whether of normal or abnormal vision. Heating and ventilation have been studied in schools with regard to sickness; the conditions advantageous for unheated open-air schools were noted, and the value was estimated of different systems for heating rooms, particularly by panels in the ceilings or walls. In these directions, and in many others advantageous but empirical, several current practices have been placed upon scientific and statistical bases.

The utility of the Board's results would, however, be greatly increased by more widespread acceptance. It is not enough for a firm here and there to adopt half-heartedly rest pauses at some repetition process; or for another to use motion study to lessen fatigue; or for a third to reduce accident frequency by expert selection when engaging labour. The

[1] Tenth Annual Report of the Industrial Health Research Board to Dec. 31st, 1929. London: H.M. Stationery Office. 1930. 6d.

established truths relating to the working of the human machine should be practised wherever that machine is employed, if only in order to lower the cost of production by enabling that machine to function most economically. We in this country are establishing these truths, but we are leaving others to adopt them. Some scheme is required for making them known by educating managers and heads of departments. The coöperation of industries in the fullest practical application of the results of research work should be secured. Further, the close association shown to exist between well-regulated activity and health emphasises the baneful influence being exerted on the nation by the present state of unemployment. It is an influence which no monetary dole can inhibit; it can only be met by active occupation, and preferably by wage-earning occupation. Here, again, is found manifested the truth that what is beneficial to the physiological functions of the individual is beneficial to the body politic.

ANNOTATIONS

MEDICAL SERVICE FOR SECONDARY SCHOOLS.

THERE are people who do not realise the need for extending medical inspection and treatment to the secondary schools of this country. They assert that the parents are both able and willing to provide what supervision and care are required, and that neither the expense nor the interference of an official service is justified. Certainly if it were the universal practice for parents to have their children overhauled at intervals by their own doctor—in many ways a highly desirable procedure—there would be some force in the argument, but such arrangements are unusual and few practitioners devote attention to such things as early defects of teeth or errors of refraction. An increasing number of children now go on from elementary to secondary schools, and they at least would suffer from losing the care and oversight they had had before. The type of supervision would take on a new aspect, for cases of uncleanliness are uncommon in secondary schools, and an unclean child would not be allowed to take a scholarship; but they do occur, and it is particularly unfair that parents of the better type should run the risk of having their children infected with pediculi or scabies. Malnutrition due to poverty is infrequent in the higher schools, since the scholars receive a maintenance grant when it is needed, but there are the new factors of long journeys and homework which may need care. Defective eyesight is of special importance, and questions of overstrain and fatigue become significant and demand the attention which is more easily given by doctors who have an exact knowledge of school conditions. In secondary schools there is special scope for the study of dietary and for the care of minor deformities like flat-foot and scoliosis, in which the school doctor coöperates with drill instructor or games mistress. There is an opportunity for the investigation of the special problems of adolescence, on which doctor and teachers in unison can exercise a controlling influence. Dental defects are too frequently found among secondary scholars; not many parents yet realise the need for periodical inspection and the importance of prophylactic treatment of the teeth; and the private dentist who insisted over much on these might lose his job. When treatment is needed a far greater proportion of secondary than elementary scholars are referred to the family doctor, although certain cases may fall outside his usual range of practice. Defects of vision, as a rule, have to go to a centre, which should be staffed by the practitioners in the district who are specially interested in eye work. Dental cases are dealt with similarly or by a dentist appointed by the education authority to carry out both inspection and treatment; figures prove that much early caries is found only by examination with probe and mirror in the hands of an expert. In neither of these types of defect is an official scheme robbing private practice; for such children would not go to private practitioners, but would overcrowd the voluntary hospitals or fall into the hands of those who are not on the professional registers. Whatever may be thought of the ability of well-trained opticians to deal with simple refractive errors in adults, there can be no doubt that the prescribing of lenses for children, whose ciliary muscles are highly contractile, without retinoscopy under a mydriatic, is liable to cause serious errors. Most education authorities now insist that certificates should not be accepted for elementary scholars unless they come from registered practitioners; the provision of treatment for visual and dental defects in secondary schools would protect the children at a later stage of development.

A CRITICISM OF CURRENT THERAPEUTICS.

IN a clinical lecture delivered at Guy's Hospital Dr. L. J. Witts[1] amusingly tilts at modern therapeutic measures. He criticises the over-use of certain drugs, the under-use of others, and the inappropriate use of still more. Objecting first to the exhibition of remedies of doubtful composition where simpler and cheaper preparations are just as good, he points out truly that the more drugs one uses the less one learns of their actions. Till more is known about the physiology of nutrition, he says, quacks will thrive and food faddists abound, and he goes on to claim that "the scourge of the unqualified practice in this country is almost entirely the result of our own vices." To a certain extent this is undisputed; all the same, if physiology is gradually leading us nearer to the truth, it has to be remembered that many discarded methods of treatment were based on the physiology of former days, and it would be interesting to know whether modern methods mentioned by Dr. Witts—such as the use of glucose in debility and infections, of alkalosis and acidosis in œdema, of saline solutions in dehydration, of carbon dioxide in asphyxia and pneumonia—will be part of practical medicine ten years hence.

A timely word of warning is given about the use of morphia and opium, and especially the method of administration in the early stages of illness. For the sake both of the patient and the doctor, Dr. Witts says, the hypodermic needle should be avoided. It is true that owing to the difficulties now thrown in the way of acquiring morphia the fear of the hypodermic morphia habit is lessening, and it is also true that insulin in diabetes and adrenalin in asthma

[1] Guy's Hosp. Gaz., Sept. 6th, p. 320.

call for more regular and quicker application of the needle than warrants a summons to the doctor, so that perforce we trust the hypodermic syringe into the patient's hands. But when once morphia injections have been begun it is often difficult to give them up, and the rapid acquisition of tolerance soon makes it hard to keep the patient under the influence of the drug. Dr. Witts also points out that intravenous medication in general is nowadays embarked on too lightly. Every kind of intravenous injection, he tells us, except normal saline, has at some time or other proved fatal, and no drug should unnecessarily be injected if it can be given by mouth. The popularity of injection is, of course, largely due to the accuracy of dosage which it allows.

THE COURSE OF EPIDEMIC ENCEPHALITIS.

IN a paper on prognosis for epidemic encephalitis in children,[1] Dr. H. A. Howe reviews a series of 66 cases which were under observation for from one to ten years after the acute onset. The development of so serious a sequela as parkinsonism long after the acute phase has made the prognosis unusually difficult in this disease. No true basis can be reached until some correlation is established between the symptoms and signs of the acute stage and those of the years of chronicity, but such a basis cannot be found if those who study the acute stage have no opportunity to follow up their cases, while those who study sequelæ have no particulars of the early symptoms. A further complication is that the sequelæ are often the first signs to be noticed, no acute stage of illness being observed at all. Indeed, it seems now to be definitely established—Dr. Howe found it so in 19 per cent. of cases—that there is an "abortive" form without any "acute illness of ordinary encephalitic type." This is not, however, to say that there were no recognisable symptoms: fever, over-activity, sleeplessness, and hallucinations were common features of such a case, followed soon by signs that are usually regarded as sequelæ. Howe attaches much importance to the fact that of his 13 cases of abortive type, while none died in the acute stage, 3 died later, 6 were at the end of six to eight years totally incapacitated, and 3 partially so; 11 of the 13 were parkinsonians. He distinguishes two other types of acute disease—the somatic, characterised by either paralyses or excitability of somatic or cranial nerves, and the meningitic, with signs of meningeal irritation. This last was the least serious: 9 out of 11 cases recovered completely. The somatic was the most fatal at the acute stage, and incapacity, partial or total, resulted in 34 per cent. From his survey he concludes that the most dangerous early sequela of encephalitis lethargica is intense over-activity, seen either in sleep disturbances or conduct disorders. This, he declares, is usually followed sooner or later by parkinsonism, which he regards as a final stage of a series of phenomena, of which over-excitability is characteristic. He separates from these, however, a milder type of emotional instability common after the somatic form, showing for a time considerable difficulty of behaviour, night-terrors, enuresis, and other symptoms, but ultimately improving or recovering. Howe claims that there is more than a mere quantitative difference between these two types of sequela, in spite of their similarity, but the important point for prognosis is that the symptoms of the dangerous type are always early in occurrence in the acute illness, either as over-activity, sleeplessness, bizarre behaviour, or hyperpnœa; disorders at a later stage have not so grave a significance.

Howe's paper is a positive contribution to our knowledge of this subject, and he draws support from a considerable section of the literature already available. Incidentally it is of interest to note that parkinsonism does not seem to be so common a sequela in America as in Europe. The 19 per cent. which he reports has been doubled and even tripled by many observers in this country, but, of course, the difficulties of early diagnosis still lend uncertainty to all statistical statements.

[1] Johns Hopkins Hosp. Bull., September, 1930.

HOLES IN DETACHED RETINA.

IN a paper published in the September number of the *British Journal of Ophthalmology*, Mr. J. Bruce Hamilton provides some information likely to be useful to those who propose to adopt Prof. Gonin's treatment by igni-puncture.[1] Holes may be very difficult to find, and it is, therefore, well to know that in shallow inflammatory detachments they are not likely to be present at all. Further, since sarcoma of the choroid is a not infrequent cause of detachment, it is as well to exclude this before spending much time in searching for a hole. It is in myopic and traumatic detachments that a hole is usually present, though it may be extremely small or may be actually hidden by a fold. Since holes are almost always in front of the equator of the globe, near the ora serrata, full dilatation of the pupil is essential. Three types of holes are found: (1) tears at the ora serrata of a crescentic shape; (2) small round holes associated with old choroiditis; and (3) horse-shoe rents. Multiple holes are not uncommon, and if they are left undetected the failure of operation is a foregone conclusion. If the detachment is above, the hole is also there, although it may be hidden by a fold. It may, however, become visible after a few days in bed. If the detachment is below, on the other hand, it by no means follows that the hole is also in that position. Sometimes a detachment below is divided by a deep cleft into two portions, and observers must be on guard against taking this cleft for a hole.

ASSISTANCE TO ALPINE TREATMENT.

WHEN the Queen Alexandra Sanatorium at Davos was closed in 1922 there remained a fund available for securing the advantages of sanatorium treatment in an alpine climate for persons of small means belonging to the English-speaking nationalities. The report for the year 1929–30 shows that 44 patients were helped to make a prolonged stay at Davos during last winter. The grant amounts to £2 (or 50 francs) a week, the recipients being allowed to choose their own accommodation from a list of approved houses. Eight of the patients received the grant for the maximum period of 197 days, the average stay being 153 days; 11 of them elected to stay in sanatoriums, 31 in pensions or small hotels, and 2 in private families. A condition of the grant, not easy to enforce in practice, is that it is not available for patients in an advanced stage of disease, and during last year the prevailing type of patient accepted was satisfactory with only four exceptions. Male patients were in order of frequency clerks, civil servants, accountants, and dentists; of the female patients five were nurses and four teachers. A pleasant feature of the year's work has been the number of letters

[1] See THE LANCET, July 19th, pp. 142 and 149.

received by the local secretary expressing gratitude for the grant and reporting satisfactory progress. Of the value of the Fund there can be little doubt, although the opinion may be based mainly on impressions; when the period of years is considered adequate an analysis of later results would help to place the Fund on a permanent basis. The visiting physicians at Davos are now Dr. Bernard Hudson and Dr. E. Nienhaus. Information in London may be obtained from either of the joint hon. secretaries to the Council: Miss M. Bulloch, 12, Thurloe-court, S.W. 3, and Mr. David Vesey, 97, Warwick-road, S.W. 5.

EFFECT OF ABNORMAL LABOUR ON THE CHILD.

THE possible after-effects of minor obstetric trauma have long given rise to speculation, especially in relation to such conditions as hydrocephalus and Little's disease. The suggestion that difficult labour may upset intelligence, even in the absence of gross cerebral trauma, has, on the whole, met with little support, since it apparently conflicts with positive evidence of a strong hereditary factor in amentia. To carry conviction observations must be on a very large scale, and they have so far been lacking. An attempt to fill this gap has been made in Massachusetts, where an investigation extending over nine years has included examination of over 20,000 children. The findings have been subjected to an elaborate statistical analysis, and are presented in a paper by Dr. Neil A. Dayton [1] which will occupy an important place in the literature.

Examination of 20,473 children (ages about 5 to 16) was carried out during 1921–30 by travelling psychiatric clinics originally devised by the late Dr. W. E. Fernald. The investigation followed the lines of the "ten-point scale," and included inquiry into abnormalities of the child at the time of birth and of the confinement. Labour was regarded as abnormal: (1) if it was prolonged—over 24 hours for primiparæ or 12 hours for multiparæ; (2) if operative procedures or instruments other than low forceps were used; or (3) if an unusually difficult labour was recorded. The material was divided into groups representing normal and abnormal labour in the mothers. It was at first subdivided into sexes, but as no significant difference was found in these subgroups they were amalgamated. The incidence of retardation (intelligence quotient below 0·7) in the children born in normal and abnormal labour was compared, and was found roughly the same. From the answers of a questionaire to 125 Massachusetts obstetricians the incidence of abnormal labour (as above defined) in the general population was estimated at the somewhat surprising figure of 70 per cent. Comparison of the figures showed that the incidence of abnormal labour in the histories of the groups of defectives and retardates was considerably below that of the general population. Further analysis of the figures showed that when the cases were ranged into groups according to the intelligence quotient there was no significant association between abnormal labour and true defect, but there was a definite association with a group representing "normal and dull normal" whose quotient was above 0·9 (74 per cent. of these were below 1). Dayton points out that a very large proportion of the population falls into this category, and he thinks the association may be of great importance. The absence of any association between abnormal labour and retardation in general was confirmed by another investigation into the average grade accomplishment of the children in various subjects to the school curriculum. Some interesting results also emerged from investigation of the physical characteristics of the children. It might be suggested that abnormal labour would lead to nutritional disturbance which would result in a diminished weight or height of the child at the time of examination. This was directly negatived by the results of analysis; no association was found with variation in the weight of the child, but there was a definite association with *over-average* height. Dayton suggests that these children were the larger at the time of birth, and thus more difficult of delivery. The incidence of specific pathological conditions was also examined; it was found that there was a significant association of abnormal labour with neurological defects, but not with physical defects in other systems.

In research of this kind the opportunities for error are great, as is well recognised by Dr. Dayton. It must also be borne in mind that statistics merely establish an association between two conditions, and it remains to be otherwise determined whether the relation is causal or whether the two conditions have a common origin. Nevertheless, it is only by such investigation that the preliminary data can be obtained.

[1] New Eng. Jour. of Med., August 28th, p. 398.

AIR AMBULANCE SERVICES.

THE Fourteenth International Red Cross Conference held in Brussels this month is giving further consideration to the use of air transport for civilian patients. Though few national Red Cross Societies are in a position to afford air ambulances of their own, satisfactory working arrangements have been made in certain countries between the Red Cross and the Government. Thus, the Swedish society provides its own aeroplanes and, in return for the services of army pilots and mechanics and the use of hangars and workshops, undertakes certain specific obligations, such as placing its aeroplanes at the disposal of Government in time of war. In Siam and the United States the societies have a working agreement with their respective Governments. In France des Gouttes and Julliot have recently prepared a draft of an additional convention for the adaptation to aerial warfare of the principles of the Geneva Conventions. This draft deals with the immunity to be enjoyed by air ambulances in time of war; but it is hoped that in peace-time also privileges will be given to ambulance aeroplanes, exonerating them from customs charges, according them priority in hangars and aerodromes, and enabling them to cross frontiers freely.

THE DEMONSTRATION OF RICKETTSIA IN MAMMALS.

THE difficulty of demonstrating rickettsia in mammalian tissue has been a weak link in the chain of evidence for the identity of typhoid virus and *Rickettsia prowazeki*. The same is true also of those typhus-like diseases, Rocky Mountain spotted fever and tsutsugamushi or Japanese river fever, for which a rickettsial origin is claimed. Nagayo and his colleagues, who have been largely responsible for the suggestion that the causal organism of tsutsugamushi fever belongs to the rickettsia, have now evolved a new method for the demonstration of these organisms in virulent material.[1] This consists in the inoculation

[1] Nagayo, M., Tamiya, T., Mitamura, T., and Sato, L.: Jap. Jour. Exp. Med., 1930, viii., 308 and 319.

of virus into the anterior chamber of the rabbit's eye. An acute iritis develops after an incubation period of four to eight days, and later the inflammatory process extends to the cornea with the development of a keratitis. The eye symptoms subside in one to two weeks, leaving, as a rule, a slight degree of corneal opacity, and the recovered eye is refractory to further inoculations. Both typhus and tsutsugamushi virus are capable of exciting this reaction, and passage can be achieved by means of the aqueous humour, though in the case of typhus virus this failed by the third generation owing to relative insusceptibility of the rabbit. Guinea-pigs and monkeys can also be used, and the immunity associated with recovery is strictly specific. The most interesting feature of this work is the observation that if the eye is extirpated at the height of infection rickettsia can be demonstrated in considerable numbers in scrapings taken from Descemet's membrane. This method should prove of great value, and the possibility of its employment in the study of filtrable viruses should not be overlooked.

B C G VACCINATION OF MEDICAL STUDENTS.

RECENT meetings[1] of the Medisinske Selskap of Oslo have considered the basis of modern anti-tuberculosis work. Prof. F. Harbitz, representing the older school of pathology, defended its teachings with much eloquence. The younger school, represented by Dr. J. Heimbeck and others, professed itself deeply sceptical of the value of the sanatoriums and other institutions which have cost the country millions of kroner. This school would like to see antituberculosis work based on Pirquet tests, followed by B C G vaccination of all the Pirquet-negatives irrespective of their ages. Statistics and charts were presented in support of conflicting hypotheses on the development of tuberculosis in the various age-groups and the value of shielding infants from exposure to infection. Prof. Harbitz himself put in a nutshell the difficulties of the position :

"As a result of recent investigations," he said, "it is already claimed that our tuberculosis work should be completely revolutionised. It would seem that we must not in the future devote so much of our energies as we do at present in combating tuberculosis in childhood and limiting the possibilities of infection in these age-groups; for in so doing we are, it would appear, merely deferring the period of infection to the years of adolescence when infection is said to be particularly dangerous. Combating infection in childhood would, therefore, logically seem to be directly harmful; the right course would rather be to allow children to become infected so that they would pass into the age of adolescence with increased resistance to tuberculosis to which they are henceforth to be immune. But how are we to manage so that the child is exposed only to a benign and slight infection? No one can at present give a satisfactory answer, and the whole of this teaching seems to me to be dangerous and to depend on many unproven hypotheses and most uncertain factors. The beneficial work, which has hitherto been carried out, and which has assuredly contributed greatly to the limitation of infection in childhood, and thereby of the morbidity and mortality from tuberculosis in childhood, should, therefore, undoubtedly, be continued, even though more persons enter the years of adolescence with a negative Pirquet reaction."

Dr. Heimbeck offers suggestive figures in support of his own contentions. In association with Dr. O. Scheel, Dr. T. Skaar, and Dr. O. Thorrud, he has found that 56 per cent. of the medical students, who had not yet begun to walk the hospitals and come in contact with tuberculous patients, were Pirquet-positive—a ratio corresponding approximately to that found in other members of their class at the same age. But during the following two or three years of hospital service, 98 per cent. were, or became, Pirquet-positive. As many as 19 of this group of 339 students developed tuberculosis during this period. Supplementary investigations made between December, 1929, and May, 1930, have thrown new light on the fate of the Pirquet-tested students who were, in some cases, vaccinated with B C G between 1927 and 1929. This latest study deals with 183 students, the nature of whose Pirquet reaction was known before they began work in hospital. Among 88 who were Pirquet-positive from the outset, there was only one who developed clinical tuberculosis during his subsequent hospital service. Among 51 with a negative Pirquet reaction at the outset and not vaccinated with B C G, there were as many as six students who developed tuberculosis. Among the 44 whose Pirquet reaction was negative at the outset, and who were, accordingly, vaccinated with B C G, there was not one who developed tuberculosis. These figures are, of course, too small to be conclusive, but supported as they are by the earlier work of Dr. Heimbeck and his colleagues on probationers and nurses in hospital, they are significant.

[1] Reported in the Norsk Magazin for Laegevidenskaben: July, August, and September.

ENTOPTIC PHENOMENA.

The Section of Ophthalmology of the Royal Society of Medicine held their first meeting this session on Oct. 8th, when Mr. E. W. Brewerton delivered his presidential address on entoptic phenomena. Under this title he dealt with the subjective observation of objects within the eyeball. These are, in fact, shadows, thrown on the retina by objects in the transparent media of the eye, of a different refractive index to the medium in which they lie. It is not necessary that objects should be opaque in order to throw shadows. If they are not opaque those with a higher refractive index than the surrounding medium appear luminous with a dark border, and those with a lower index have a dark centre and luminous edges. The objects may arise from the cornea, the lens, the vitreous, or the retina. Before the advent of the ophthalmoscope, said Mr. Brewerton, their observation was considered to be of very great importance. Able oculists and physicists thought it worth while to devote hours to the detailed study of the phenomena and the literature of the subject was voluminous. At the present time so many elaborate instruments are available for the examination of the eye that older and simpler methods of subjective examination are seldom used. Various methods were now available for the subjective examination of the different media of the eye. To examine the pupillary area of the lens the best method was to make a minute hole in a piece of paper with the point of a very fine needle. If this was held between the eye and a bright electric light an illuminated area was visible in which many details could be made out, even in a normal lens. To examine the vitreous all that was necessary was to look at a bright light with the lids nearly closed, when many transparent curly bands with dark borders could be seen, some larger than others. The larger ones were further from the retina, and their shadows were magnified; strands close to the retina threw very small shadows. The subjective examination of the macular region could be effected by a light focused through the sclerotic, which showed up this region with astonishing details, the other parts of the retina being out of focus. It was not, of course, possible for an observer to see his own optic disc by this method. Mr. Brewerton concluded his interesting address with the suggestion

that trained observers, notably medical men, suffering from advancing cataract or from degeneration in the macular region, should make periodical subjective drawings which might prove to be of considerable value to ophthalmologists.

BRONCHOSCOPY IN SUPPURATIVE LESIONS OF THE LUNG.

As a pioneer in the science and art of bronchoscopy Dr. Chevalier Jackson has greatly advanced the scientific study of suppurative lesions of the lung, while perfecting the technique of clearing the way to promote their healing. Speaking at a general meeting of Fellows of the Royal Society of Medicine on Oct. 14th he gave it as his opinion that as long as drainage and ventilation were good the lung could resist any infection reaching it by way of the air passages, and that bronchial obstruction was the primary factor in every case of lung suppuration arising by this route. A foreign body is, of course, not necessarily responsible for the obstruction, although Dr. Jackson's reputation has given him unequalled opportunities, of which he has made full use, of detecting and extracting these. Obstruction by viscid sputum in asthmatic patients he finds to be a common cause, and believes that, in many cases diagnosed as asthma, the air-hunger is due to such obstruction and can be relieved by aspiration through the bronchoscope. This highly viscous sputum invalidates the two chief protective agents of the lung—the effective cough and the movement of the cilia. The plug of purulent sputum prevents air from entering to expel it from below, and the cilia, like bees in honey, are clogged and helpless. At this point Dr. Jackson believes a plumber is required to clear the tubes. The extraordinary valve action of certain obstructions was illustrated by a cinematograph projection of some of his diagrams. For example, a pedunculated growth at the junction of the bronchi to the upper and lower lobes was moved by the currents of air in such a way that during inspiration the lower bronchus was occluded, and during expiration the upper. In this way air entered the upper lobe but had no means of escape, while the lower lobe was pumped empty by expiration, but had no means of filling again; as a result emphysema supervened in the upper lobe and atelectasis in the lower, until bronchoscopy revealed the cause of the trouble. A small patch of chronic inflammation in a bronchus may act as an obstruction both by a reduction in calibre of the air channel from granulation tissue and by inhibition of the ciliary action. Stagnation occurs behind the lesion, and an occasional aspiration with the removal of granulations is apparently sufficient to maintain the patient in health. Among his most interesting results Dr. Jackson includes the cure of lung abscesses by repeated aspiration, the number of times which the aspiration was performed reaching 78 in one case. The patient in question insisted on this extreme perseverance, in the face of Dr. Jackson's contrary opinion, and proved by his recovery that he knew where his best hope lay. In other cases, however, three or four aspirations were sufficient to restore to the lung its defensive power, and to make the cough effective once more. The removal of stagnating pus inevitably benefits both the local and the general condition. Another type of case in which bronchoscopy has been of value is that of post-operative massive collapse of the lung, due to an obstructive atelectasis. If the secretion is pumped out the danger of subsequent suppuration is avoided at the outset. Among causes of obstruction other than pins and nuts, Dr. Jackson includes in his experience actinomycosis and blastomycosis, primary tuberculosis of the bronchus without lesions in the lung, portions of bone from operative procedures in the nose and mouth, and fragments of badly tempered instruments. He also finds that on occasion sputum obtained from the bottom of a cavity by aspiration will contain the causative organism of the lesion when the expectorated sputum is sterile. On more than one occasion he has discovered spirochætosis of the lungs in this way, with the result that the use of antisyphilitic remedies gave a complete cure of a previously chronic condition. In a short moving picture Dr. Jackson was able to demonstrate the technique of bronchoscopy with the aspiration of pus, injection of antiseptic agents, and, in one case, the dilatation of a stricture of a bronchus by bougies. No general anæsthetic was used for any of these procedures, which occupied only a few minutes; cocaine was used to anæsthetise the pharynx and larynx during the introduction of the instrument. A series of lantern slides of the conditions described illustrated the remarkably good results obtained by Dr. Jackson by the use of the bronchoscope, particularly in the aspiration of lung abscesses.

MESCALISM.

WITHIN the past two or three years the alkaloid mescaline sulphate has been increasingly used as a drug. According to Dr. Macdonald Critchley, who lectured this week to the Society for the Study of Inebriety and Drug Addiction, measures have been necessary to check the importation of the drug and to limit its sale. The use of this alkaloid has indeed, he said, become almost a cult, by reason of its peculiar pharmacological effects. It is neither an euphoriac, like cocaine and heroin, nor an exhilarant, but it possesses in unequalled manner hallucinatory properties. No other drug, not even cannabis indica, has the power of evoking such amazing visions, which are said to be bewildering in their complexity and beauty. The existence of a mescal addiction to-day in the great cities of Europe is of interest, because the drug really belongs to the deserts of Central America, and its addiction has been for centuries the perquisite of the Mexican and American Indian. Mescal, also known as peyote or peyotl, is a cactus indigenous to the Southern States of North America and to Central America. The pharmacological action of mescaline was first investigated in 1898 by Prof. W. E. Dixon, who found that it slows the heart-rate and increases the blood pressure in small doses, and in larger amounts poisons the respiratory centre. In small vertebrate animals there is a combined excitatory and inhibitory effect upon the central and peripheral nervous systems. The chief effect in man, however, is upon the visual and psychovisual areas of the cerebrum, and in a few years much work has been done, particularly in Germany, upon this aspect of the drug. Mescal intoxication shows itself in a state of prolonged visual hallucinosis, accompanied by vertigo, headache, nausea, confusion of thought, distorted vision, and profound disorientation in time. Dr. Critchley and a colleague, Dr. Ferguson, experimented with 0·2 g. of mescaline sulphate, and it is on these subjective experiences that his account of the visual phenomena was founded. Visions began to appear within 25 minutes after ingestion of the drug. At first they were simple in pattern and colouring, and were visible only with the eyes shut.

Later they became more complicated; they no longer comprised geometrical designs, but took on three-dimensional form, appearing as figures and scenes, all most brilliantly illuminated and coloured, and all changing with the utmost rapidity. The hallucinations now became apparent with the eyes open, though never to the same extent as when the eyes were closed. This bewildering state of hallucinosis reached its maximum in about 90 minutes, and persisted at this level for many hours. The visions did not entirely disappear for 24 hours. He described some of the visions in the words of the subject:—

"Yellow specks dotted upon a black background . . . they are becoming larger and more numerous, and are forming a pattern. Red is now the most prominent colour; the arrangement is like a carpet, consisting in concentric rectangles, dark-red, salmon-pink, blue-golden, and so on. Large white specks dart rapidly in from the periphery on to the carpet, like bright silver coins pouring into the centre—or else like white streaks of lightning. Everything is now moving; the carpet design is breaking up and gives place to a mass of bright spangles dancing rapidly all over the picture. . . ."

Later ". . . A meadow with buttercups and daisies; now it is changing into a stereotyped park, with a bandstand and with chairs, each one of which is whizzing rapidly round on its own axis. Butterflies are coming in from all sides; the bandstand has disappeared. The butterflies all collect into the centre and arrangé themselves into a circular, brightly coloured flower-bed, rotating rapidly in a clockwise direction, in a most wonderful manner . . . now a huge field of primroses . . . a complicated pattern like Hampton Court maze, brightly coloured with objects moving quickly in a snake-like, sinuous fashion along the apparently endless pathways of the maze."

Speaking of the hallucinations themselves Dr. Critchley quoted the observations of Klüver that certain form-constants often recur, such as spirals, cones, lattice-work, geometrical figures, carpet-like patterns, and so on. The visions are always brightly coloured; no one tint preponderates. Sometimes colours are said to be present which have no earthly counterpart, and are consequently indescribable. A striking feature is the dazzling brightness of many of the hallucinations, which seem to be illuminated from within. The influence of suggestion upon the pattern or content of the hallucination is usually slight or non-existent; one cannot evoke a particular scene merely by effort of will. A particular feature—also pointed out by Klüver—lies in the frequent incompleteness of the visions, this quality being known as the "presque vu" phenomenon. The usual emotional content of the hallucinosis is described as one of amazement, awe, interest, and delight. Almost all writers have insisted that the most skilful pen or brush could not do justice to the marvel of the hallucinations. Metamorphosia or changes in appearance of external objects frequently occurs, the objects appearing too big or too small, or there may be an exaltation of stereoscopic vision so that details and minutiæ are strikingly enhanced. Newspapers, pictures, floors may look like relief-maps. Havelock Ellis said that "matting on the floor showed a very rich texture, thick and felted, and seemed to rise in little waves." Changes may occur in other sense fields. The faculties of taste, smell, and hearing may be enhanced or perverted. There may even be some intangible intermingling of the senses so that qualities of one special sense are described in terms of a different sense-faculty. The side-effects of mescal are of interest. The laboratory tests carried out at Yale by Prof. Angier have shown that mescal (1) interferes with the accuracy, precision, and steadiness of muscular movements; (2) retards visual apprehension; (3) reduces the accuracy and concentration of attention; and (4) lessens the memory of ideas. The effects of prolonged usage of mescal is readily observed among the Indian communities. While not a dangerous drug, mescal must be regarded as habit-forming, and all writers agree that it is harmful mentally, physically, and economically. Dr. Critchley spoke of some of the problems which arise in the study of mescal hallucinosis, and to the possibilities of this drug as a deliberate instrument in psychological and neurological research. For example, a minority of individuals experience no hallucinations while under the influence of mescal; some experience a gorgeous and multicoloured pageantry, others see only a medley of geometrical shapes. The visions evoke delight and amazement in some, and depression and fear in a few. The variation is probably to be sought in the particular psychological make-up of the individual. The scope of mescal in the field of therapeutics is almost unexplored. The Indian uses this plant for every manner of ailment, and attempts have been made to introduce peyotl into American therapeutics. From time to time reports have appeared as to its efficacy in the treatment of asthma, neuralgia, rheumatism, and neurasthenia. Dr. Critchley quoted some curious results that have been recorded in the treatment of blindness in tabes. It is said to have produced a temporary but very marked enlargement in the fields of vision and an increase in the visual acuity.

Lord Amulree, the new Minister for Air, who takes his title from a place in Perthshire, is brother of Sir James Mackenzie, who died in 1925.

Dr. T. G. Moorhead, Regius professor of physic in the University of Dublin, has been elected President of the Royal Academy of Medicine in Ireland.

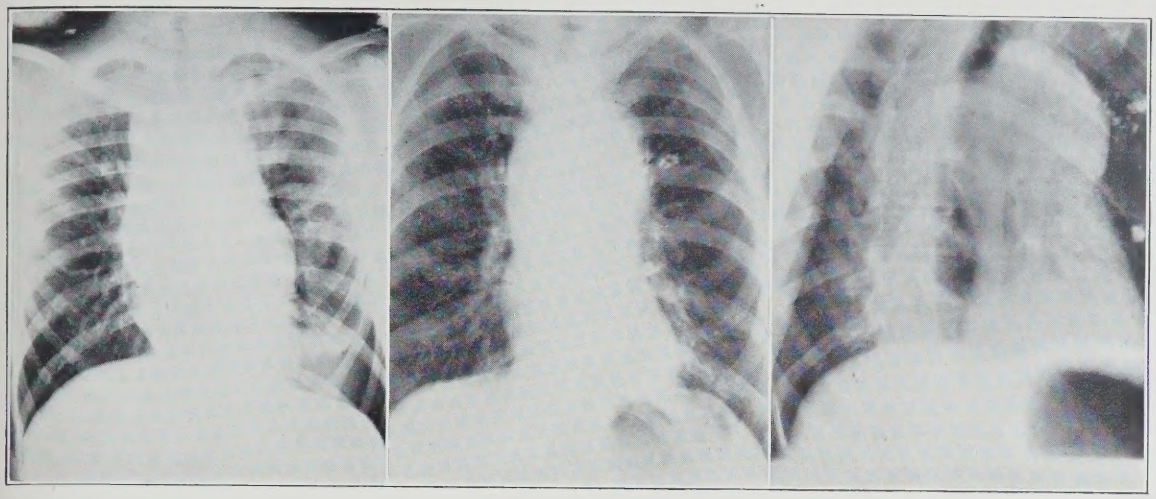
Dr. J. M. Woodburn Morison, lecturer in radiology in the University of Edinburgh, has been appointed to the first chair of radiology in the University of London.

THE Harveian Oration on the discoveries which formed the starting-point of modern biological chemistry will be delivered by Prof. J. B. Leathes, F.R.S., at 4 P.M. to-day, Saturday, at the Royal College of Physicians of London. The Bradshaw Lecture of the College on paroxysmal tachycardia will be given by Dr. W. E. Hume on Nov. 4th, and the Mitchell Lecture on indications for treatment in pulmonary tuberculosis by Dr. L. S. T. Burrell on Nov. 13th.

WE publish this week an article from Prof. Edward Hindle on the transmission of yellow fever, written for the information of the Permanent Committee of the Office International d'Hygiène Publique. This Committee is now in session in Paris, and yellow fever is among the diseases which are left to the consideration of the Paris Office under the provisions of the International Sanitary Convention, 1928.

CENTRAL ASSOCIATION FOR MENTAL WELFARE.—A Conference on Mental Welfare will be held at the British Medical Association House, Tavistock-square, London, W.C., from Dec. 11th to 13th. An opening address will be given by Mr. Arthur Greenwood, Minister of Health, and subjects of discussion will include matters relating to the Mental Treatment Act, the Mental Deficiency Acts, and school reorganisation in connexion with the education of defective or retarded children. The address of the association is 24, Buckingham Palace-road, London, S.W. 1.

XXX. XXXII. XXXIII.



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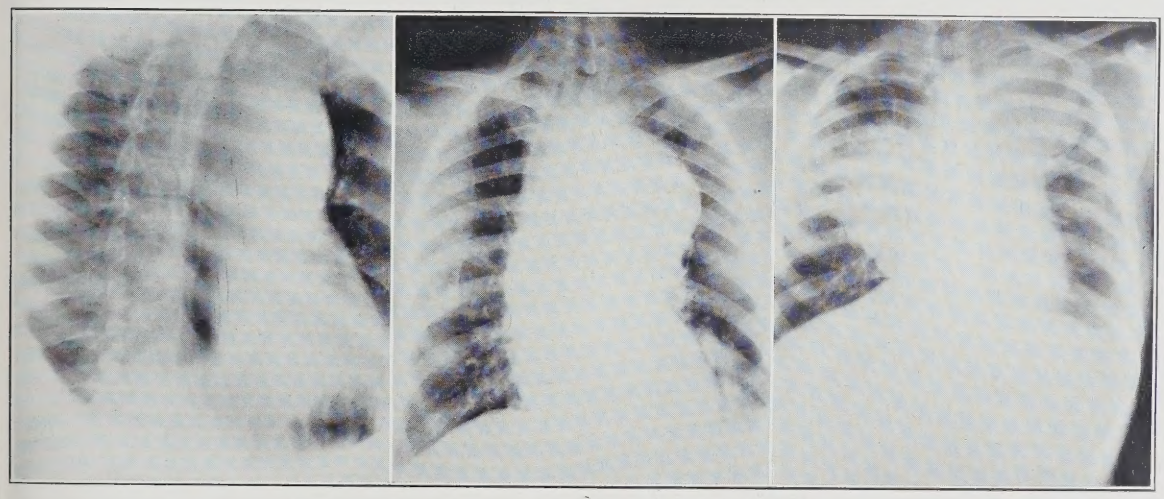

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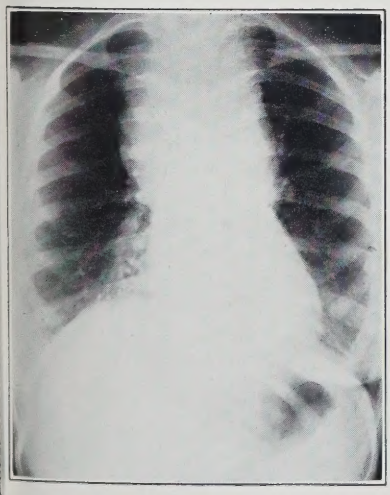
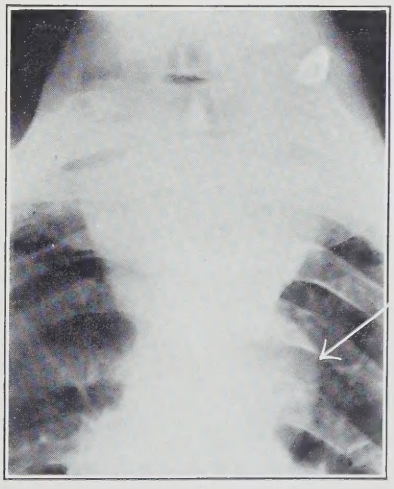


DRS. BURRELL AND MELVILLE:

INTERPRETATION OF RADIOGRAMS OF THE CHEST.

XXXVIII.



DR. SCOTT PINCHIN AND DR. MORLOCK: ABSCESSES OF THE LUNG.

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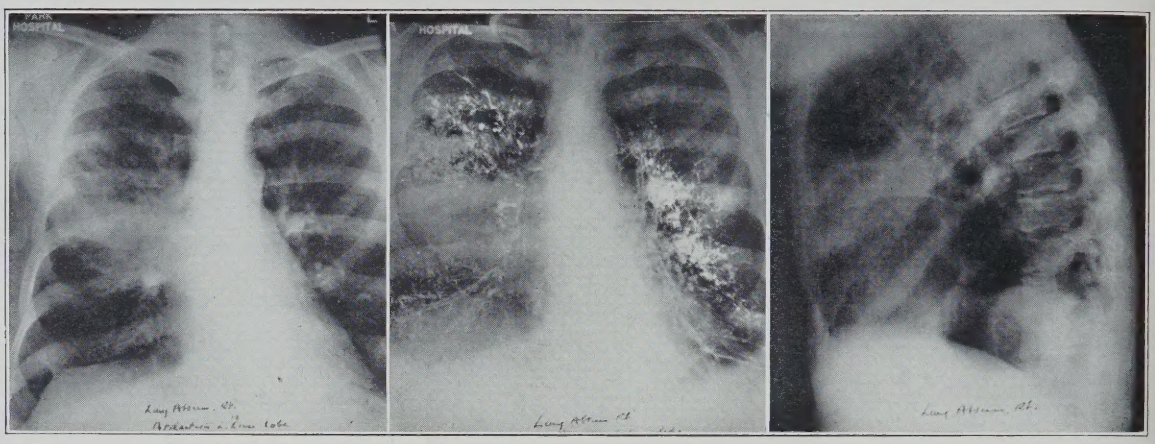

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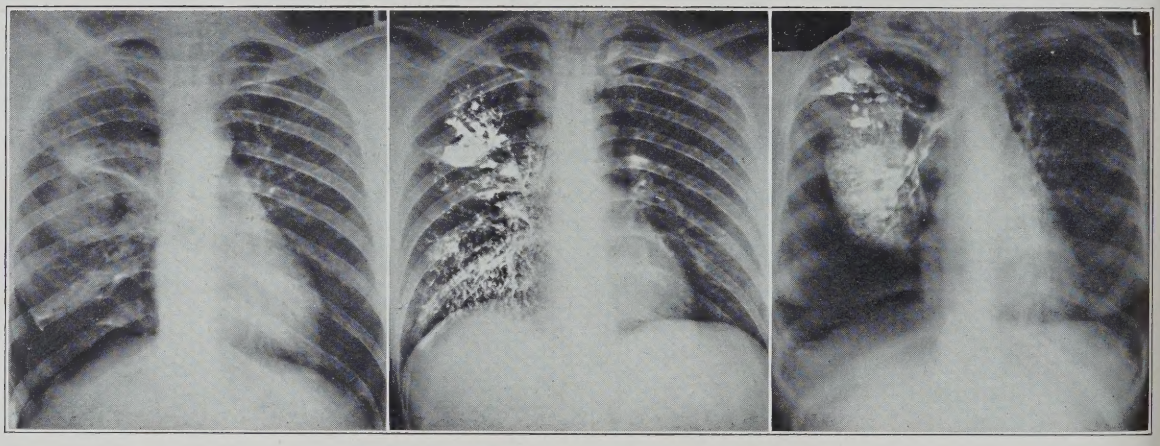
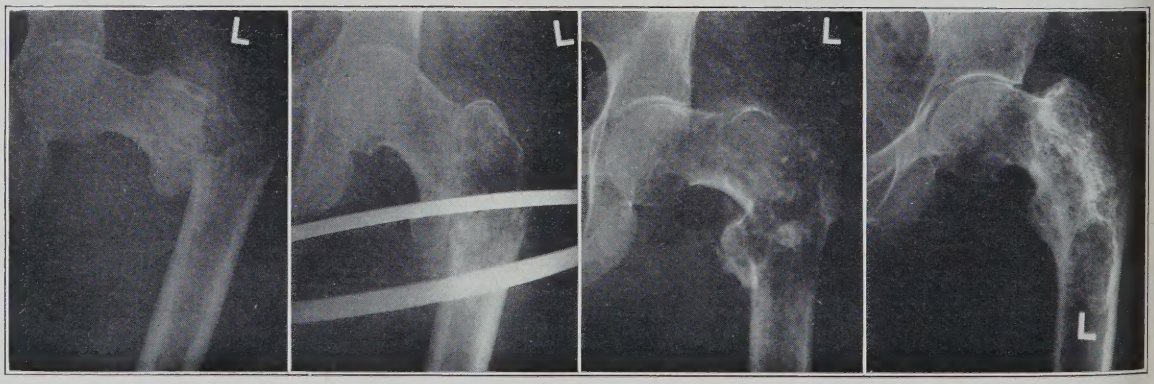


DR. HERNAMAN-JOHNSON: DEEP X RAY THERAPY IN FRACTURE DUE TO METASTASIS

I. II. III. IV.



CLINICAL INTERPRETATION OF AIDS TO DIAGNOSIS

A Series of Special Articles, contributed by invitation.

LXXXVI.

RADIOGRAMS OF THE CHEST.

(WITH ILLUSTRATIVE PLATE.)

PART III.*

TUMOURS OF THE MEDIASTINUM.

As elsewhere, neoplasms in this region must be divided into those that are malignant and those that are non-malignant. The following tumours may be met with in the mediastinum: Inflammatory conditions (especially tuberculous glands); lymphoma and lymphadenoma; fibroma, lipoma, enchondroma, or a tumour with all these cellular elements combined; dermoid cyst and teratoma; hydatid cyst; sarcoma, especially of the lymphosarcomatous type; carcinoma; syphilitic gumma; and aneurysm of the arch of the aorta. The latter is included because of the vital importance of this condition in differential diagnosis.

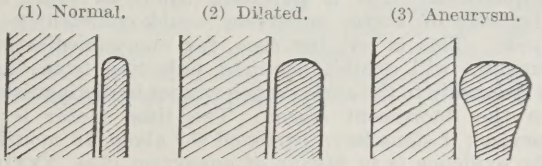
Mediastinal new growths may arise from the lung tissue, but this must be of extreme rarity; from the thoracic wall, that is to say, from the periosteum of the sternum (sarcoma may originate thus); from the bony structures as in the case of chondromata; from the mediastinal lymphatic glands, either primarily or by extension from the cervical or the posterior mediastinal glands; or from the thyroid or the thymus glands. The diagnosis of new growth, at least in the early stages, in this situation, is not without difficulty, nor does the clinical evidence assist greatly in differential diagnosis. Many of the physical signs are alike in all forms, and these are due in the main to pressure effect. Cyanosis, venous engorgement, and signs of collateral circulation are possibly more common in new growth.

* Part I., Normal and Infective Conditions, and Part II., New Growths of the Lung, have appeared in recent issues of THE LANCET.

Differential Diagnosis.

Differential diagnosis has to be made between (*a*) lymphadenoma, or Hodgkin's disease; (*b*) aneurysm of the arch of the aorta; (*c*) sarcoma growing either from mediastinal glands or from the remains of the thymus; (*d*) tumour of the thyroid gland.

FIG. XXXI.



Diagrammatic outline showing the appearance of the aortic arch as seen in the right oblique diameter against the spinal column. Comparing (2), the generally dilated arch of the aorta, with (3), aneurysmal dilatation, it will be seen that in the former the sides of the vessel are parallel, while the latter shows "clubbing."

LYMPHADENOMA.

The X ray picture is that of a fairly well-defined opaque mass in the mediastinum, usually unilateral. As a rule, characteristic glandular enlargements are met with elsewhere (in the neck, axilla, or groin). There is frequently a blood picture showing a moderate eosinophilia, progressive anæmia, with increase in the

LEGENDS TO ILLUSTRATIONS APPEARING ON SPECIAL PLATES.

DRS. BURRELL AND MELVILLE: INTERPRETATION OF RADIOGRAMS OF THE CHEST.

XXX. *Lymphadenoma.*—The mediastinum is wider than normal, the upper limit of the heart and great vessels being overshadowed by the mass. On the left side in the upper zone there is an irregular opacity suggesting the reaction of the lung tissue to the mediastinal growth.

XXXII. *Aneurysm of the arch of the aorta.*—The mediastinum is much wider than normal; the outline is sharply defined. (There are some calcareous plaques in the pleura of no special significance.)

XXXIII. *The same case* as in fig. XXXII. seen in the right oblique plane. The aortic arch is "clubbed," this clubbing being the characteristic feature of aneurysm of the arch. Note in lateral plane the bulging of the aorta both forwards and backwards.

XXXIV. *Aortic aneurysm* involving the descending aorta in addition to the arch.

XXXV. *Large aneurysm* of the arch, showing the marked displacement of the trachea.

XXXVI. *Lymphosarcoma.*—A large tumour invading the lung tissue, showing the irregular outline which is characteristic of this tumour as it spreads into the surrounding tissues.

XXXVII. *Lymphosarcoma of mediastinum.*—This shows widening of the mediastinum and somewhat simulates aneurysm of the aortic arch. The outline is not, however, quite so sharply defined and the ascending portion of the arch can be seen as a distinct shadow.

XXXVIII. *Tumour growing from the thyroid gland.*—This tumour is seen to be growing downwards behind the manubrium sterni, depressing the arch of the aorta which is indicated by an arrow. Lateral compression of the trachea is also to be noted.

DR. SCOTT PINCHIN AND DR. MORLOCK: ABSCESSES OF THE LUNG.

. Lung abscess in right mid-zone.

I. Radiogram after lipiodol injection. The lipiodol has not entered the abscess, but has outlined the surrounding bronchi.

II. Lateral view, showing that the abscess is in hilar region, and involves the anterior portion of the lung.

V. Abscess in right mid-zone. Artificial pneumothorax just started.

V. Lipiodol has entered the abscess.

VI. Radiogram from another case showing the treatment of an abscess by artificial pneumothorax. Lipiodol injection shows that the abscess and the associated bronchiectasis in the right upper lobe has not been completely collapsed, although the lower and middle lobes are collapsing well.

DR. HERNAMAN-JOHNSON: DEEP X RAY THERAPY IN FRACTURE DUE TO METASTASIS.

Right hip on admission to hospital (May 31st, 1928). Note shortening, and rotation of head of femur.

. Condition on discharge (July 11th, 1928). Patient wearing Thomas's splint. Rarefaction at site of fracture, the significance of which was missed.

I. Condition on readmission (Oct. 26th, 1928). Note extensive area of "worm-eaten" bone. It was this picture that led to further inquiry into the patient's history.

IV. Radiogram taken on Jan. 31st, 1930, after treatment by extensive and deep therapy. Shows bone consolidated, and Shenton's curve almost restored. Patient walking well, with stick only.

leucocytes and frequently pyrexia, all of which, if present, are helpful in diagnosis (fig. XXX.).

ANEURYSM OF THE ARCH OF THE AORTA.

The differential diagnosis of this condition is not without difficulty, but much help can be obtained from the history and the absence or presence of a positive Wassermann reaction. The X ray examination shows a well-defined rounded opacity in the upper part of the mediastinum. Examination in the lateral oblique plane is essential, and will show the presence of "clubbing," which is characteristic (figs. XXXI. and XXXII.). The clinical evidence of involvement of the recurrent laryngeal nerve is of the greatest value. At one time it was stated emphatically that if pulsation could be seen, the diagnosis of aortic aneurysm could confidently be made. This is not the case, for many mediastinal tumours will exhibit acquired pulsation from their relationship to the aorta, which cannot be distinguished on the fluorescent screen. The time factor is of service; if signs have persisted for about 18 months, the evidence is in favour of aneurysm (figs. XXXIII., XXXIV., XXXV., and XXXVII.).

SARCOMA OF THE MEDIASTINUM.

Though originating on one side, a lymphosarcoma frequently invades both sides of the mediastinal space, causing lateral compression and deviation of the trachea, definite signs of compression, and interference with the circulation. There is frequently a transmitted pulsation, equal to or greater than that seen in a large, consolidated aneurysm. To determine whether or not pulsation is transmitted is a difficult, if not an impossible, matter. This tumour differs from aneurysm in that it less frequently causes erosion of the bony structures, but this is by no means an invariable rule (figs. XXXVI. and XXXVII.).

TUMOUR OF THE THYROID GLAND.

Examination in the lateral plane will reveal a tongue-like process growing downwards and forwards and *depressing the arch of the aorta*. This depression of the arch clearly demonstrates the situation of the growth. Such tumours are of rare occurrence (fig. XXXVIII.).

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and

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SPECIAL ARTICLES

RESEARCH IN MENTAL HOSPITALS.

THE first part of the second volume[1] of the Annual Report of the Board of Control is devoted, as usual, to reports from the various mental hospitals of research work undertaken by them during the year.

The most bulky communication comes from the Joint Board of Research for Mental Diseases of the City and University of Birmingham, where research has been directed towards the ætiology of and primary changes in chronic disease, especially in the neighbourhood of the brain. In a large proportion of cases changes have been found post mortem in the sphenoidal sinus and antrum, and often there are septic remains of adenoid tissue. It has been shown that anoxæmia of the brain may cause mental derangement. Reports from each of the visiting specialists are printed, and among cases reported in detail are one of *B. pyocyaneus* infection, one of oro-naso-pharyngeal sepsis and atheroma, one of polycystic disease of the kidneys, pyonephrolithiasis and nasal sinusitis, and four illustrating the relation between mental disease, sphenoidal sinusitis, the pituitary gland, and the pyrexial response to foreign protein. Eleven cases of exophthalmic goitre suggest that local treatment of the goitre cannot be relied upon to cure any associated mental disorder.

At St. Andrew's Hospital, Northampton, a study has been made of gastro-intestinal focal infection in relation to oral sepsis. Sepsis in the mouth can usually, they find, be traced right through the digestive tract, but anaerobic methods are essential. At Hellingly uræmia and high urea contents are being investigated, as they have been found in a high percentage of cases, suggesting widespread renal damage among the insane. Croydon also finds a perfectly healthy kidney very rare in the mental patient.

[1] H.M. Stationery Office, 1930, pp. 403, 6*s*. 6*d*.

STUDIES ON THE BLOOD AND METABOLISM.

At Colchester blood cholesterol has been studied. It is raised in dementia præcox and manic-depressive insanity and, less constantly, in other psychoses, but not in imbecility. States of confusion, excitement, and depression are accompanied by a fall, which appears to be a normal part of the emotional reaction. At West Park an investigation has been made into the distribution of chlorine in the blood and urine; psychotics showed a varying degree of retention, together with a varying degree of defect in respiratory regulation in the early morning. In katatonic dementia præcox there is a reversal of the normal shift of chloride from plasma to corpuscle during sleep, and exercise causes a decrease in the acid load of the corpuscle. Barnwood House has made a special study of indicanuria and finds that patients benefit from high colonic lavage; this method of treatment has also been found valuable for a variety of cases at St. Andrew's Hospital, Northampton. Oxford is also studying the excretion of indican as well as encephalitic material.

The carbohydrate metabolism in psychotics has been investigated at the Cardiff City Mental Hospital, and work has been commenced on the oxidative and enzymic processes in the brain. There is some indication that certain oxidative changes in the cell are powerfully influenced by adverse environmental circumstances, whereas other changes proceed normally. The Calderstones Mental Deficiency Institution has been studying the sigma reactions of the blood of defective epileptics. A number of hospitals are using the Meinicke micro-reaction as a routine, but reports vary somewhat. Some find it much more convenient than and quite as reliable as the Wassermann; others do not find it so satisfactory, especially on the cerebro-spinal fluid, for which Kirkburton has found the Boltz acetic anhydride test to agree 100 per cent. with the Wassermann. At Lancaster, on the other hand, a negative Boltz is not regarded as reliable. The Leicester City Mental Hospital compare

the Vernes test with the Wassermann and considers it worthy of further study.

Whittinghame has been trying a ketogenic diet in epilepsy, but finds it too severe for most adults; in 10 out of 36 patients there was a definite reduction in the number of fits, but no complete arrest. At West Park a carbohydrate and alkali diet has given no clinical improvement in dementia præcox except that the stuporose cases tended to become more active; they also showed some benefit after injections of sulphosin.

Diabetes Insipidus and Chronic Encephalitis.

Work on diabetes insipidus at Wadsley has shown that this condition may be due to a transient affection of the pituitary glands which may disappear completely, but a more severe affection—e.g., a congenital defect—may be permanent. The polyuria may be brought about by inhibition of secretion of the posterior hormone, owing to a mild lesion in the hypothalamic region stimulating an inhibitory centre or tract to the pituitary. A severe hypothalamic lesion does not cause diabetes insipidus.

The pituitary has been examined in chronic epidemic encephalitis and changes have been found quite frequently. In some cases hyperplasia was found in the anterior lobe and the pars intermedia and in others atrophy, destructive changes, or hæmorrhages. In all cases there was great congestion in the anterior lobe and in two there was a good deal of colloid in the pars intermedia. In the hypothalamic region there were also changes which did not necessarily run parallel with alterations in the rest of the nervous system. Hæmorrhages were commoner here than in other parts of the body. It has been found that the brain may be very abnormal chemically while appearing healthy. The increased calcium content in chronic epidemic encephalitis may bear some relation to the sleep disturbances and to the sudden deaths. In general paralysis, arterio-sclerosis, and Huntington's chorea there is great loss of phosphorus, but in encephalitis the phosphorus is usually about normal.

Treatment, especially that of G.P.I.

From Rainhill comes a report on sulfosin and nirvanol in general paralysis. The former is harmless, but has proved useless unless the temperature reaches 103° F.; the latter is dangerous, as the pyrexia is uncontrollable and uncertain. At Claybury, on the other hand, sulfosin is favourably regarded. From Winwick and from several other hospitals come interesting case-reports and discussions on malarial therapy. At the Maudsley Hospital tryparsamide has been found valuable, both as a substitute for, and as an adjunct to, malarial therapy in general paralysis. At Stafford tryparsamide has been abandoned in favour of sulpharsenol and biscam. At the Norfolk County Mental Hospital Ducrey's bacillus, marketed as Dmelcos, has been tried with very satisfactory results. It can be safely used where malaria is contra-indicated or cannot be tolerated. A case of labo-paresis was treated with tryparsamide with remarkable success at Wonford House Hospital, Exeter. At Fareham various drugs have been used for epilepsy, with the conclusion that the bromides and phenylmalonyl-urea compounds are the most useful. The prophylactic value of iodine in influenza is being tested at Whittinghame, and Winwick gives a summary of the effects of actinotherapy. Napsbury reports on protein therapy with T.A.B. vaccines, and Croydon has found glucose useful in epilepsy during the course of an investigation into the liver function in epilepsy and dementia præcox. The treatment of varicose veins by injection in 17 patients is recorded from Parkside, whence also comes a study on the relation of the cause of death to the type of insanity which opens up many interesting possibilities. The incidence of cancer for 25 years has been found at Rainhill to be 3·77 per cent. as contrasted with 13 per cent. for the general population. At Bexley a study is being made of a group of patients suffering from a chorea which seems to be clinically indistinguishable from Huntington's but not to show the usual family history. The West Riding and Lancashire Mental Hospitals have been occupied with systematic searches for organisms of the typhoid-dysentery group. The problem of diagnosing pulmonary tuberculosis in mental patients who yield no sputum has been solved at Stafford by examination of the fæces, and the Royal Eastern Counties Institution at Colchester has succeeded in eliminating diphtheria by routine use of the Schick test.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

ROYAL ACADEMY OF MEDICINE IN IRELAND.

Prof. T. G. Moorhead has been elected President of the Academy, the sectional presidents for the coming session being Prof. H. F. Moore, Mr. R. A. Stoney, Prof. A. H. Davidson, Dr. J. Lait, Dr. C. P. Martin, and Prof. W. D. O'Kelly.

ROYAL VICTORIA HOSPITAL, BELFAST.

Dr. J. S. Morrow has resigned his appointment as senior physician after an association of 27 years with the hospital, and has been appointed consulting physician. The medical staff has placed on record a tribute to his distinguished service to the hospital as teacher, counsellor, and physician. Dr. Robert Marshall has been promoted to physician in charge of wards, and Dr. R. Sydney Allison, now one of the physicians to Ruthin Castle, has been elected assistant physician to out-patients. Mr. A. B. Mitchell, F.R.C.S.I., consulting surgeon to the hospital, has been appointed chairman of the board of management in succession to the late Marquis of Dufferin and Ava.

SOME ASPECTS OF MEDICAL HISTORY.

At the opening of the winter session Dr. S. B. Boyd Campbell delivered the annual oration in the King Edward VII. Memorial Hall of the hospital on Oct. 9th. Mr. T. S. Kirk, senior surgeon, occupied the chair. Dr. Campbell traced the slow development of hospitals from the temples of Æsculapius; he showed how the training of nurses was the first step towards the efficiency of the modern hospital by the introduction of cleanliness; and he described vividly the struggle of truth against Galenical tradition and superstition. Speaking of epidemics in ancient times he described how the best precautionary methods were administered as three adverbial pills: "Go quick, go far, and return late." He compared this with the successful methods adopted to stay the outbreak of plague in San Francisco in 1900 by the slaughter of millions of rats and ground squirrels. He recalled how Simpson was denounced in the pulpit for the use of chloroform, and his reply to his critics. The strange drugs used in bygone days furnished an interesting part of his address; one of them, the "everlasting pill," mentioned in the Supplement to the Pharmacopœia as late as 1849, was a small

globule of metallic antimony which was believed to act as a purgative as often as swallowed. A lady alarmed at the non-recovery of such a pill was reassured by her physician: "Madam," he said, "fear not, it has already passed through a hundred patients without any difficulty." Dr. Campbell recalled that the British Government refused to buy seeds of the cinchona plant obtained at great risk. The Dutch Government bought half of them for £33 and raised 20,000 plants—the beginning of the Java industry from which millions of money have been made. Prof. W. W. D. Thomson, in moving a vote of thanks, mentioned that in 1935 the Belfast Medical School would be 100 years old, and regretted that the history of their school was still unwritten.

TYRONE COUNTY HOSPITAL.

The Duchess of Abercorn has opened a new home for the nurses of the Tyrone County Hospital at Omagh. The building, which will accommodate 30 sisters and nurses, comprises lecture and class-rooms, and liberates a number of rooms in the hospital which can now be made into wards.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

MR. GANDHI AND THE PUBLIC HEALTH.

POLITICAL questions have bulked so largely in India lately that it cannot be wondered at if other aspects of life have received less public attention than usual. There are, however, keen observers outside India who are watching closely the sequence of events, and nowhere is more interest displayed than in America. Miss Mayo, for instance, evidently keeps in touch with the Indian news, and she has a remarkable article in the September number of the *Atlantic Monthly* about Mr. Gandhi's recent activities which is worthy of attention both from the medical and social points of view. It is, perhaps, not generally realised that, apart from politics, Gandhi was at one time the most enterprising and energetic of all the modern Indian social and hygienic reformers. It was probably in connexion with his ambulance work with the British forces in the Boer war that his name first became widely known to the British public, but for many years he has been exposing the shortcomings of his fellow countrymen in social matters and public health, setting a practical example in his own person, usually on very sound lines. Of late, in his bitter hatred of the British connexion, these original objectives have been obscured, and he has frequently selected modern scientific medicine for his most virulent abuse, in spite of the inconsistency, which he has admitted, of resorting to a British surgeon for operation in his attack of appendicitis. In his new mentality he has developed a special dislike for anything in the nature of inoculation, denounces vaccination as a dangerous and filthy habit, and continues to oppose the practice in spite of a recent outbreak of small-pox amongst the unprotected children of his *ashram* at Ahmedabad. The upshot is interesting—at the very time chosen for his march to the sea to manufacture illicit salt in defiance of Government, his headquarters were, as Miss Mayo says, a small-pox pest centre. It was under these conditions that he started with 79 disciples to travel 160 miles or more across a populous countryside. What might have been expected happened. Day by day men dropped from the ranks stricken by small-pox, to be left behind in villages and form centres of infection along the line of march. In due course, it is stated, while the Bombay Presidency as a whole reported a decrease in the disease, the figures rushed up in the particular section through which the pilgrimage had taken place.

It is clear from other circumstances that Gandhi's interest in social welfare has now fallen into the background of his thoughts. One of its main features was opposition to child marriage, while, as it happened, his march coincided with the last few days before the Sarda Act (the measure prohibiting the marriage of girls under 14 years of age) came into force, and with the phenomenal rush of Hindu families to get their children married, before it became illegal, which characterised certain districts at that time; so that all along the route the people's most pressing interest was the wedding of girl babies. But it would appear that Gandhi took no note of it, so wholly has sedition become his religion. He said so, and he appealed to his hearers to make it theirs, disregarding, for the most part, the glaring scandal of the child marriages. In like manner he appears to have deserted the cause of the untouchables of late. In proportion as they support the British *raj*, and show their dread of being handed over to their high caste compatriots, he has appeased them with expressions of sympathy. Let them wait for national independence, he says, and all the rest will follow. But the depressed classes are not prepared to accept his advice. There is an old Indian proverb that if you live by the ford it is wise to make friends with the crocodile. The untouchables evidently think it is still wiser not to live by the ford. Meanwhile their quondam champion, temporarily laid on the shelf in the Yeravda Prison, retires further into his veil of mysticism, and is now apparently chiefly concerned in considering whether it is or is not sinful for him to drink milk. Cow's milk, and buffalo's, he is vowed against, but might he take goat's, with safety to his soul? If he does not his doctor has told him he will die. But milk, except for babes, is an unnatural food, and it is a question, which he puts to himself, whether he should indulge in it at all. Incidentally a very serious question for vast numbers of his countrymen, if they are to follow his lead, depending, as they do, on milk for a large proportion of their protein. But whichever way Gandhi's decision may lie, one may at all events be certain that fear of death will have no influence, for imprisonment has always been a welcome relief to him from the world's turmoil, and to cease from living he would probably regard as a happy release.

MEDICINE AND THE LAW.

Lump-Sum Bill or Details?

IN the middle of last month a correspondent asked in the columns of the *Times* if there was "any reason why doctors should not send in their bills in a more businesslike and detailed form." Everyone, he said, feels the doctor's bill as a blow in the dark and pays it "with some resentment, not knowing whether or not he has been fairly dealt with." Subsequent correspondents warned the original letter writer that, if he had a detailed account, the bill would probably be heavier. The odd pounds would cease to be knocked off; the extra charge for night visits might be insisted upon. One writer pointed out that the patient can keep a note of all the doctor's visits if he wants to know what the bill means. Another

suggested that the patient, if dissatisfied with the lump-sum bill, should ask for details; or, better still, he might prevent all future doubt by paying cash at each consultation. Towards the end of the holiday season the correspondence languished. It revealed no widespread grievance on the part of the public.

A medical practitioner can, if he chooses, attend a patient on the understanding that his services are not to be remunerated. If there is no such understanding, the practitioner is prima facie entitled to reasonable remuneration for services rendered. In the last resort it will be for the court to interpret the word "reasonable" in terms of pounds, shillings, and pence, after inquiring what the services were and what are the circumstances of the parties. These last resorts, however, are expensive and disagreeable. To quote "The Conduct of Medical Practice," it is as well that the scale of the remuneration should be agreed with the patient at the outset, whenever possible, to avoid misunderstandings. Legally there is no need to agree the scale in advance; but legally there is a duty to explain, if asked, how the lump-sum bill is made up. It will probably be the experience of most practitioners that the patient is more interested in the total than in the details.

The Need of Patience.

A Liverpool physician, giving evidence lately in a compensation case in the county court, stated that he had examined the workman on behalf of the employers on a certain date. In cross-examination he was asked if the workman did not complain of pain at that examination. He replied in the negative. Cross-examining counsel, having received an unfavourable answer, put the question again, suggesting that the patient had complained of pain during the interview and that the witness had pooh-poohed the complaint. The practitioner repeated his denial. Thereupon counsel is reported to have said: "I suggest that that is not true, doctor; I have had to put similar questions to you before in other cases." Though a cross-examiner may be entitled, by the licence allowed him in the law-courts, to repeat a question several times and to put an allegation of perjury in the form of a question, it seems entirely improper that he should further add, in the form of a statement made as of his own knowledge, an offensive observation purporting to convey that the witness has committed similar perjuries in his hearing in other cases previously. If counsel are to give evidence on these lines they should go into the witness-box and be in turn submitted to cross-examination. What is a witness to do who is subjected to such discourtesy? He should appeal to the judge for protection, if necessary. Unfortunately, though many good judges would have sternly called upon counsel to withdraw an improper observation, the court on this occasion declined to interfere. Counsel, said the judge, are entitled to ask questions in accordance with their instructions.

There remains, then, for anyone who has the discomfort of giving evidence the need of infinite patience. Advocates may make it their object to provoke him into loss of temper; they must not be gratified. They may hope for a display of partisanship; they must be disappointed. If some day the public comes to the conclusion that mud-slinging under cover of legal procedure has gone rather too far, patience may have its reward.

PUBLIC HEALTH SERVICES

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are 1929 statistics of four seaport cities:—

Name of district and estimated (R.-G.) mid-year population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and neonatal mortality.	Young child (1–5 yr.) mortality.	Maternal mortality from childbirth.
Bristol.. .. (391,000)	15·6	13·0	1·21	1·39	2·3	2·6	60/32	32	4·4
Hull .. .. (299,900)	20·3	15·2	1·24	1·34	3·6	2·5	104/35	71	4·4
Portsmouth . (242,000)	16·8	13·8	0·94	1·54	2·7	2·5	66/26	33	3·4
Cardiff.. .. (224,200)	17·5	12·9	1·34	1·27	2·3	2·1	84/37	53	3·6

Stillbirths per 100 live births: Bristol, 4·5; Hull, 4·3; Cardiff, 5·0.

Bristol.

Dr. R. A. Askins says the general death-rate was 8 higher than in the previous year, principally owing to influenza. Diphtheria was also twice as prevalent as in the previous year and the type of the disease was more severe. There were 1132 cases with 62 deaths (60 of which were of children under 5 years). In order to facilitate the immediate use of antitoxin, an arrangement has been in force since October, 1924, by which practitioners are kept supplied with a stock of antitoxin available for poor patients at the cost of the health committee. A second whole-time maternity and child welfare doctor has been appointed and a scheme has been approved and plans prepared for a central clinic, which will replace a number of existing clinics held in unsuitable buildings. There are seven municipal antenatal clinics, which were attended by 2241 new cases. Five maternity hospitals also hold antenatal clinics. The need for postnatal examination of the mothers is recognised but is not feasible at present owing to the lack of suitable premises.

There were 11 cases of encephalitis notified and nine of them proved fatal. Seven cases of cerebro-spinal meningitis were notified with six deaths. On March 3rd the medical officer of health was asked to see two cases diagnosed as hæmorrhagic small-pox, but ultimately decided to be cerebro-spinal meningitis. One boy, aged 1 year 4 months, was found to be dead with an intense hæmorrhagic rash, another was ill (he died on March 17th) with a similar rash. Both children had gone to bed well on the previous night. On March 8th a third child in this family, aged 2 years 11 months, who was quite well on the previous day, developed a hæmorrhagic rash and died the following day. The remaining child, a boy of 5, escaped infection. Under the Local Government Act, 1929, the poor-law Southmead Hospital will be appropriated as a general hospital by the health committee and the health committee will become responsible for the maintenance of all children who came under the purview of the poor-law. The poor-law medical officers will form part of the staff of the medical officer of health. The medical superintendent of the mental hospital will become responsible

for all residential institutions for mentally affected persons, and will also conduct an out-patient clinic for mental cases at Southmead Hospital.

The housing committee, as opportunities occur, acquires unfit houses and reconditions them by "direct labour." Forty-four houses were dealt with in this manner during the year, and 21 more were similarly reconditioned for the Bristol Churches Tenements Association, Ltd. Since 1919, 971 houses have been demolished and there still remain hundreds which ought to be so treated. Section 3 of the Housing Act, 1925, has been found useful, and in 15 cases out of 53 the Council did the work in default of the owners.

Hull.

Dr. W. M. Frazer presents the report although he only took over the duties on Dec. 2nd in succession to Dr. W. Allen Daly, now an L.C.C. principal medical officer, who ceased work in Hull in October. The death-rate was 1·4 higher than in the previous year and the infant mortality-rate 104 as compared with 79 in 1928. The rise in infant mortality was due to an epidemic of pneumonia in February and March and to the increased prevalence of diarrhœa in October.

One of the events of the year was the opening of the Hedon-road Maternity Home and Infants' Hospital. This consists of six pavilions and an administration block and will provide 49 beds for maternity cases and also for puerperal fever and pyrexia, ophthalmia neonatorum, and venereal diseases in pregnant women. It has been decided as a result to close the maternity wards of the poor-law institutions as from April 1st, 1930, and to concentrate this work at the new home. All women who apply for admission to this home or for the services of the municipal midwife are required to attend an antenatal clinic. The number of patients seen at the antenatal clinics was 1737, and amongst these there was only one maternal death. The total births numbered 6095. The mothers confined in the maternity home or attended by the municipal midwives were invited to attend the postnatal clinic. These mothers numbered 1050 and 291 accepted the invitation. The scheme for providing home helps is giving satisfaction, and during the year 148 cases were attended by 31 approved home helps. Another event was the opening of the East Hull Clinic, which enables the residents of East Hull to obtain public medical services at one centre, which formerly they could only secure by attendance at six different addresses. Plans of both these new buildings are given in the report.

The interchange system begun in 1928, by which the medical officers of the department are available for work in any section, is proving very satisfactory and also popular with the medical staff. On the one hand it is useful in case of emergencies such as an epidemic of small-pox and, on the other hand, it gives the staff a wider experience and outlook. The extension of the city has added 4033 acres, making a total of 13,392, and bringing the outside housing estates within the boundary. The municipal houses completed numbered 454, about half as many as in 1928. There is still a vigorous demand for all types, except for certain houses on the East Hull estate, where, at the end of the year, there were vacant "33 central-heated parlour houses of construction other than brick." At the end of the year an important scheme was begun for the scheduling of all insanitary houses within the city. The housing staff was reinforced by the temporary help of ten sanitary inspectors for this work. When this survey is completed and knowledge of foreshadowed legislation is exact, it is hoped to draft an effective programme, covering a period of ten years for the clearance of all the present slums. The privy conversion scheme has been completed with remarkable rapidity, and a new modern plant for the disposal of domestic refuse was opened by Mr. J. C. Dawes, inspector of the Ministry of Health in September.

The administrative scheme under the Local Government Act, 1929, is well in hand. The Public Assistance Committee is the health committee with coöpted members (including four women), equal in number to half the health committee. The Public Assistance Committee has no power to raise a rate, borrow money, alter the scheme, or make a contract for more than £500, but is charged with the care and maintenance of all persons who required relief in poor-law institutions or out-relief. For the first time large hospitals for general medical and surgical purposes will be at the disposal of the local authority, and experience will show how this hospital service can best be used for raising the health standard of the community.

Portsmouth.

Dr. A. Mearns Fraser shows that the general death-rate was nearly 2·0 higher than the average for the previous ten years, and that the infant mortality-rate was 66 as compared with 60 for the previous decade. Deaths attributed to influenza numbered 154 and the increased infant mortality was due to the greater prevalence of summer diarrhœa. The notified cases of diphtheria were 766, of which 727 were removed to hospital and 24 died. The hospital accommodation proved inadequate and in June it was decided to increase it by 84 beds, at an estimated cost of £32,000. Hitherto children, convalescent from diphtheria, have been allowed to return to school in a fortnight after discharge from hospital, but a new procedure has now been adopted under which swabs are taken from the noses and throats immediately before return to school. By this means a number of children with diphtheria bacilli still in their throats have been prevented from resuming school.

Dr. A. Cambell, medical officer of the V.D. clinic at the Royal Hospital, is specially gratified at the result of treating children suffering from congenital syphilis. The number so treated has been about 600, and with few exceptions they are growing up as healthy members of the community. There is an increase in new cases of male syphilis, chiefly among sailors and general labourers. The former contract the disease abroad, the others chiefly in Portsmouth.

The new combined maternity hospital and child welfare centre was opened in April. Additional medical staff is required for the centre. There are frequently over 100 infants in one afternoon, of whom 60 should be seen by the medical officer, but there is only one medical officer. Midwives attended about 75 per cent. of the births and 1768 expectant women paid the 5*s*. premium to ensure against the fee of the doctor should he be needed. For the insured women a doctor was sent for in 38·5 per cent. of the cases and for uninsured women a doctor was sent for in 24·2 per cent. The insurance scheme is more costly for the health committee, but Dr. Fraser thinks it is worth it, so long as medical assistance is not sent for, "just because the patient is insured." The scheme saves collecting and clerical expense and relieves the mothers of a good deal of anxiety.

Cardiff.

Dr. R. M. F. Picken says the year 1929 was one of departmental stocktaking rather than of administrative progress. Among general sanitary needs he mentions the relief of overcrowding in dwelling-houses and improvement of living conditions generally. Among the houses visited during the year on account of birth or tuberculosis notifications or for housing records, numbering some 4000, over 50 per cent. were occupied by more than one family. The dwelling-houses number 43,000. Not more than 20 per cent. have sanitary dustbins and there are approximately 14,000 insanitary hand-flushed closets. Dr. Picken goes on to give a long list of new accommodation needed at the hospitals. Since the passing of the Local Government Act the Council has become responsible for institutions containing over 2000 beds mostly reserved for the population of the city, whilst

of the 677 beds of the voluntary hospitals less than half are regularly used by Cardiff residents. Dr. Picken also has lists of requirements for maternity and child welfare, the school health service, and for mental deficiency and juvenile delinquency.

Dulwich House, a bequest from the late Lord Pontypridd, was opened on April 8th for the reception of children suffering from early acute rheumatic conditions. Cases for admission are selected at a special rheumatic clinic, at which 215 children were under observation during the year. Seventy-two children were admitted to the hospital all of school age. An endeavour is made to exclude children with established heart lesions. In 31 the heart was involved to a minor degree, in 8 to a serious extent, and in 33 it was not definitely involved. As a rule the lesser degrees of heart involvement tended to clear up, but in four cases the condition progressed steadily and had become permanent before discharge. This study of the earlier phases of rheumatic carditis promises to be a very interesting one. All the cases discharged come under the observation and supervision of the clinic. Prof. E. P. Cathcart, Glasgow University, has carried out an investigation of the dietaries of 56 of the poorer working-class families in Cardiff, which suggests that the Cardiff families are better off, as regards dietary, than Dundee and Glasgow families of similar circumstances. As the family income increased the most marked feature was a rise in the consumption of fat. The children in the families investigated were very slightly below the average Cardiff school-children in height and weight.

For two years complaints have been received as to the occurrence of urticaria among the bathers in Roath Park lake. Careful investigations indicate that the eruption is due to a water snail (*Limnæa stagnalis*) infected with *Cercaria elvæ*, which has been the cause of similar outbreaks in the United States of America. This water snail was not known in Cardiff until 1915. The lake was treated with copper sulphate in March, 1930, but in July there was a recurrence of the eruption, and the snails and cercariæ were again found. The treatment of the water has been repeated but its efficacy is still in doubt. Small-pox was introduced five times during 1929. There were only eight cases, however, and this experience confirms the view as to the low degree of infectivity of the prevailing type. Of the eight cases, seven were unvaccinated and one case, over 40 years old, had been vaccinated in infancy. During the year an arrangement was made with the Queen's Institute for the home nursing of cases of pneumonia, and 9 cases were so nursed.

The problem of the infestation of the houses on the corporation estates with vermin has assumed serious proportions. Details are given of the strenuous efforts which are being made to prevent this nuisance.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 4TH, 1930.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 4 (last week 82); scarlet fever, 1998; diphtheria, 306; enteric fever, 50; pneumonia, 516; puerperal fever, 39; puerperal pyrexia, 91; cerebro-spinal fever, 8; acute poliomyelitis, 22; acute polioencephalitis, 2; encephalitis lethargica, 7; continued fever, 1; dysentery, 9; ophthalmia neonatorum, 30. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Oct. 7th–8th was as follows: small-pox, 168 under treatment, 1 under observation (last week 196 and 2 respectively); scarlet fever, 1523; diphtheria, 1828; enteric fever, 22; measles, 97; whooping-cough, 128; puerperal fever, 16 (plus 6 babies); encephalitis lethargica, 117; "other diseases," 28. At St. Margaret's Hospital there were 12 babies (plus 3 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 2 (1) from enteric fever, 7 (1) from measles, 9 (2) from scarlet fever, 15 (1) from whooping-cough, 35 (6) from diphtheria, 67 (20) from diarrhœa and enteritis under two years, and 27 (7) from influenza. The figures in parentheses are those for London itself.

The death from enteric fever outside London occurred at Manchester. Three deaths from whooping-cough were reported from Birmingham, 2 from scarlet fever at Bradford, and 7 from diphtheria at Liverpool. The deaths from diarrhœa numbered 8 in Liverpool, 3 each in Willesden and Sunderland.

The number of stillbirths notified during the week was 262 (corresponding to a rate of 39 per 1000 births), including 49 in London.

LONDON MEDICAL SOCIETIES.

SESSION 1930–31.

AT the opening of a new session we are giving for the convenience of our readers the names of President and of hon. secretaries, with the address at which they can be approached.

Royal Society of Medicine:—President: Dr. T. Watts Eden; Hon. Secretaries: Mr. E. K. Martin, F.R.C.S., Dr. George Riddoch. Address: 1, Wimpole-street, W. 1.

Royal Society of Tropical Medicine:—President: Dr. G. Carmichael Low; Hon. Secretaries: Dr. C. M. Wenyon and Dr. N. Hamilton Fairley. Address: 11, Chandos-street, W. 1.

Medical Society of London:—President: Dr. R. A. Young; Hon. Secretaries: Dr. A. Hope Gosse, Mr. W. E. Tanner, M.S. Address: 11, Chandos-street, W. 1.

Hunterian Society:—President: Prof. A. W. Sheen, F.R.C.S.; Hon. Secretaries: Dr. D. C. Norris, Mr. Andrew McAllister, F.R.C.S. Address: 14, City-road, E.C. 1.

Harveian Society:—President: Dr. P. Montague Smith; Hon. Secretaries: Dr. J. A. B. Hammond and Mr. C. P. G. Wakeley, F.R.C.S. Address: 9, Cleveland-gardens, W. 2.

Medico-Legal Society:—President: Lord Riddell; Hon. Secretaries: Mr. Ernest Goddard, Sir Bernard Spilsbury. Address: 11, Chandos-street, W. 1.

Chelsea Clinical Society:—President: Mr. F. J. McCann, F.R.C.S.; Hon. Secretaries: Mr. A. Rugg-Gunn, F.R.C.S., Mr. H. P. Baylis, L.D.S. Address: 49, Harley-street, W. 1.

London Clinical Society:—President: Mr. H. J. Paterson, F.R.C.S.; Hon. Secretary: Dr. Marie Cassidy. Address: 41, Elvaston-place, S.W. 7.

West Kent Medico-Chirurgical Society:—President: Dr. F. Hudson Evans; Hon. Secretary: Dr. C. J. B. Buchan. Address: "Ledard," Baring-road, S.E. 12.

Royal Medico-Psychological Association:—President: Dr. T. Saxty Good; Hon. Secretary: Dr. R. Worth. Address: Springfield Mental Hospital, S.W. 17.

Society of Medical Officers of Health:—President: Prof. Harold Kerr; Exec. Secretary: Mr. G. L. C. Elliston. Address: 1, Upper Montague-street, W.C. 1.

Tuberculosis Association:—President: Prof. S. Lyle Cummins; Hon. Secretary: Dr. G. T. Hebert. Address: St. Thomas's Hospital, S.E. 1.

STOCKTON-ON-TEES ISOLATION HOSPITAL.—An enlargement of this hospital was opened last week. It includes a new pavilion of two wards and 18 beds, and two single-bedded wards; there is, in addition, a block of eight cubicles. The nurses' accommodation has also been improved.

SHEFFIELD CONTRIBUTORY SCHEME.—Notwithstanding trade depression, the income of the Sheffield "Penny-in-the-Pound" scheme last year reached its highest point—£118,189. During the year the scheme was joined by 186 firms employing 2765 persons, and 404 small traders undertook to pay £1 a year to the fund.

CORRESPONDENCE

A MEDICAL SERVICE FOR THE NATION.

To the Editor of THE LANCET.

SIR,—For some time past both the public and the medical profession have been greatly exercised in their minds about the evolution of the medical service of the nation. War experience brought doctors into closer and more human contact with the public as a whole, and the public, not only through those who suffered in their health directly through the war, but also through the auxiliary services which worked so successfully in assisting the profession, gained an inside knowledge of medical practice. Yet another reason for the growing public interest in medical practice is the steady advance in the science and practice of medicine, including prophylaxis and therapeusis in the widest sense, as a result of which medicine has far more to offer for the sick than it had some years ago, and there is every reason to believe that the growth of medical knowledge will advance even more rapidly in the future. Now in its great effort to recover itself from the strain and losses of the war the nation is taking stock of its resources, and of these the most important is its human material. We who belong to the medical profession must take a forward place in promoting the health and well-being of the people, because on it and national character our ultimate recovery depends.

There are many people who think that the institution of a State medical service is the best means to this end, and many others, who fear this prospect, think it is ultimately bound to come. When one realises the immense control of medical service by the State which has resulted from the National Health Insurance Acts, the creation of the Ministry of Health, and the passage of the Local Government Act, 1929, it is evident that there is some reason for this anticipation and fear.

The great objection to a State medical service is that, while it may improve the average practice of medicine, it will reduce the level of the best, and to a large extent do away with the great ideal of personal service. Those who have served the State in any capacity know well that the individual is sacrificed to the State, whereas in the private practice of medicine everything is sacrified to secure the recovery of the sick person. An alternative means of securing a more efficient medical service for the nation is by the extension of the present Insurance Acts to include dependants of present insured persons, and at a later date a further extension to include persons with a higher income than at present come within the Insurance Acts. The British Medical Association supports this development of medical service, and has published its proposals for a general scheme. In regard to these proposals, I believe that there are serious objections to the extension of insurance practice, because—

(*a*) It will destroy the personal relation between the doctor and his patient, and the patient will lose the personal interest and friendship of his doctor. He will lose his doctor's interest because he will not pay his doctor a fee for his actual professional work, and he will lose his doctor's friendship because in paying him nothing he will feel under an obligation to his doctor for much of his professional service, instead of gratitude for the service rendered in excess of the fee paid for it.

(*b*) Another objection is that, taken as a whole, in spite of the fact that the roll of panel doctors includes the best men in the profession, panel practice cannot be carried on at a sufficiently good standard for reasons that are too well known to the profession to require enumeration here. If the number of panel patients, therefore, is increased, it will inevitably increase the practice of inefficient medicine.

(*c*) Further, it will place an intolerable burden on panel doctors by increasing the number of discretional night calls, frivolous calls, and the unjustifiable demands for medical certificates, all of which abuses are difficult to control even at present.

The B.M.A. proposes to create home hospitals into which doctors can follow their patients, and I believe that this is impracticable. Some doctors want to do hospital work, but I believe that the majority have neither the aptitude for institutional work nor the desire for it. At present there is often difficulty in securing the services of the best local practitioners for the honorary consulting staff of voluntary hospitals, and though one of the reasons for this lack of interest in hospital service is the fact that it is hardly paid, yet neither in the future would extra fees be gained if doctors had the opportunity to follow their panel patients into home hospitals. Lastly, the B.M.A. proposals are financially unsound. However unpalatable the truth may be, it must be realised that a large proportion of the nation are not economically worth private doctoring. They are morally, physically, and mentally inferior people, and their doctoring must be done on a cheaper scale than that of providing each with a private (panel) doctor. If the nation is to provide a private doctor for everyone, the efficients (the average and superior people) will be strangled economically.

In speaking thus of average and superior people, I recognise, as any doctor does, that there is in this no class distinction. We who have the care of people in their greatest emergencies and stress know well that the finest and strongest character is found in all classes of society, and a future Prime Minister of England may be the son of a working man whom his doctor knows as one of the average or superior sort.

There remains a third line along which the medical service of the nation may develop. It is assumed in the first place, that the best doctoring is provided by a patient's private doctor who is paid for his work. Therefore all those who can afford such doctoring would be allowed to enjoy it, and they would pay their doctor from their own funds or out of insurance funds to which they had made proper contribution. In the second place, all those who cannot pay their doctors' fees would be a charge on the State. For minor ailments they would attend voluntary or municipal hospitals, and if not fit to attend an out-patient department it would be an obligation on the State to send an ambulance to the patient's house and by law incumbent on that patient to go to the nearest municipal hospital for in-patient treatment.

It seems to me that this third suggestion for the development of medical service is more economically sound and in better keeping with the ideals of the medical profession, as well as to the best advantage of the nation as a whole, than either of the other two schemes. At the same time it leaves with the municipal hospitals the burden of providing medical service for the poor on wholesale lines at the level which the health is economically worth, and it allows scope both for voluntary hospitals and general practitioners to practise their charity for the relief of the sick poor, which has always been one of the highest ideals of medical service. It is, indeed, on the provision of this charitable service that the financial sinews of the voluntary hospital ultimately depend. I believe

it is good for national character to have this opportunity for doing charitable work, and this opportunity would be lost in the creation of a State medical service. I am, Sir, yours faithfully,

London, N.W., Oct. 9th, 1930. GEOFFREY EVANS.

ACHYLIA GASTRICA AND PERNICIOUS ANÆMIA.

To the Editor of THE LANCET.

SIR,—Two cases, reports of which will appear in the October number of the Guy's Hospital Reports, indicate that free hydrochloric acid itself is of more importance in preventing the development of Addison's anæmia and subacute combined degeneration of the spinal cord than would appear from the important investigations of Castle and his colleagues referred to in your annotation of Oct. 11th (p. 809). A gastro-jejunostomy was performed on a man with a gastric ulcer and a normal curve of acidity. His digestive symptoms disappeared, but two years later he developed typical Addison's anæmia with early subacute combined degeneration of the cord and Hunterian glossitis, apparently as a result of the achlorhydria which was now present owing to the complete neutralisation of the free acid in his stomach by the alkaline duodenal juices entering through the stoma.

In the second case (the third of the kind I have seen) treatment of the gastritis, which I thought was the cause of his achlorhydria, led to the reappearance of free acid in the gastric contents of a man with severe Addison's anæmia. Here again the only gastric factor concerned in the development of the disease appears to have been the absence of free hydrochloric acid.—I am, Sir, yours faithfully,

ARTHUR F. HURST.

New Lodge Clinic, Oct. 13th, 1930.

THE ALKALOIDS OF ERGOT

To the Editor of THE LANCET.

SIR,—The annotation with this title which appeared in THE LANCET of Sept. 20th (p. 652) points to the conclusion that official ergot of rye contains no ergotamine whatever, and that, consequently, this substance cannot be regarded as the true active principle of official ergot of rye. I am under the necessity of correcting these erroneous conclusions, which are based on a paper by S. Smith and G. M. Timmis,[1] and, equally, I must refute any suggestion that ergotamine, which has been used for many years in the manufacture of Femergin (Gynergen) preparations, is not produced exclusively from ergot of rye.

As far back as 1923, in a paper communicated to *die Naturwissenschaften*,[2] I emphasised the fact that ergotamine does not exist in all commercial specimens of ergot, and, in addition, that the content of ergotoxine also varies enormously, depending on either the age or source of the drug. In this paper I specially pointed out that there are several specimens of commercial ergot which contain no ergotamine at all, and that ergot had been investigated "which, though it still contained traces of ergotoxine, yielded no ergotamine, whereas from other samples of ergot practically the total amount of crude alkaloids, obtained in a good yield, could be transformed into the beautiful crystals of ergotamine." On this point, therefore, Smith and Timmis's paper presents nothing new.

At first sight it appears incomprehensible that these authors were unable to isolate ergotamine from official ergot, but reflection suggests the question whether this failure was not due, at least in part, to the method of isolation; this, notwithstanding the fact that Smith and Timmis do not attach any importance to Stoll's "protective" methods of extraction. Since Smith and Timmis do not give any figures stating the yield of crystalline alkaloids, it is impossible to form an opinion as to the efficiency of their method of isolation from a quantitative point of view. Comparative chemical methods will be discussed in another and more appropriate place, and, at present, I would only mention that Smith and Timmis by their method obtain not only ergotamine, but also its transformation product ergotaminine. This proves that their method does not sufficiently take care of the sensitivity of ergotamine. By the "protection" method ergotamine only and no ergotaminine is obtained from fresh ergot. The transformation of the primary alkaloid ergotamine into ergotaminine, which latter substance is very difficultly soluble, and, consequently, also very difficult to isolate, may occasionally lead to the mistaken conclusion that ergot contains no, or very little, ergotamine.

It has never been stated, to my knowledge, that ergotamine, the properties of which are now so well known, can be obtained by one method only. It is, however, an indisputable fact that its first isolation in a pure state was effected by Stoll's "protective" method, and that that method still furnishes the best yield obtainable and the purest product. This conclusion represents the result of my ten years' experience obtained in the manufacture of ergotamine on a technical commercial scale. It is, of course, quite possible that Smith and Timmis did not have any official ergot rich in ergotamine at their disposal. On the other hand, A. W. Forst [3] has isolated ergotamine alongside ergotoxine from official ergot, while we ourselves have frequently succeeded in obtaining ergotamine in a considerable yield, and in some cases alongside ergotoxine from the varieties examined by Smith and Timmis—i.e., Portuguese, Czecho-Slovakian, and Hungarian [4] ergots.

The most definite proof of the fact that ergotamine exists in official ergot is provided by practical experience on a very large scale. During the past ten years the Sandoz Chemical Works, Basle, have extracted ergotamine, by the pound, from many tons of official ergot of rye by the "protective" method, and the ergotamine tartrate thus obtained has been, and still is, used in the preparation of Femergin and Gynergen products. No variety of ergot other than ergot of rye has ever been dealt with in the Sandoz Chemical Works.

For nearly ten years ergotamine preparations have been used in an ever-increasing measure, and hundreds of experimental and clinical research workers have shown that ergotamine possesses all the specific properties of official ergot. As yet no such clinical literature exists on ergotoxine. While in 1923 the British Pharmaceutical Codex (p. 412) still denied recognition to ergotoxine as a clinically efficient active principle of ergot, ergotamine already possessed extensive clinical literature, providing evidence to the fact that it was regarded as the active

[1] Jour. Chem. Soc., June, 1930, p. 1390.
[2] Berlin, 1923, p. 705.
[3] Arch. Exp. Path. Pharm., 1926, cxiv., 132.
[4] One kilo of ergot of rye collected by Prof. Issekutz in the neighbourhood of Sceged (Hungary) in 1928 yielded in my laboratory 0·5 g. pure crystals of the ergotamine (acetone water).

specific principle of ergot. If, in the meantime, investigators, notably Dale and Spiro, have produced evidence that ergotoxine and ergotamine are pharmacologically alike, although they are chemically different, this is no reason for degrading the importance of ergotamine as the active principle of official ergot of rye.

The view that ergotoxine-ergotinine on the one hand, and ergotamine-ergotaminine on the other hand, are different chemical substances has been maintained by me since shortly after ergotamine was first isolated, and I have frequently and consistently supported this view by publishing comparative tables on the properties of both alkaloid groups.[5] Owing to the pharmacological identity of ergotoxine and ergotamine the chemical difference of the two substances has occasionally been questioned, and this doubt received consideration in Smith and Timmis's paper. These investigators, as a result of their experimental research work, have now come to the important conclusion that the two alkaloidal groups are, indeed, chemically different. I would add that a series of analyses recently carried out in our laboratories, under exactly the same conditions for the alkaloids of both groups, confirms the difference in chemical composition, as published by me at an earlier date. The analyses of C, H, and N, executed under special precautionary measures and with the greatest care, and on which I will report in another paper, confirm the formulæ of $C_{35}H_{39}O_5N_5$ for ergotinine and of $C_{33}H_{35}O_5N_5$ for ergotamine and ergotaminine.

I conclude: 1. Ergotamine exists in official ergot of rye, and has been produced on a manufacturing scale for the past ten years, exclusively from ergot of rye, for the manufacture of Femergin (Gynergen) preparations. 2. During this period extensive experimental and clinical literature has provided conclusive evidence that ergotamine possesses all the specific properties of the active principle of ergot. 3. It has once again been confirmed that ergotoxine and ergotamine, and their corresponding transformation products ergotinine and ergotaminine, although possessing identical pharmacological action, are chemically different substances.

I am, Sir, yours faithfully,

Basle, Oct. 8th, 1930. Prof. ARTHUR STOLL.

LORD MOYNIHAN'S ADDRESS AT TORONTO.

To the Editor of THE LANCET.

SIR,—No article that has appeared in THE LANCET in recent years preaches a more necessary gospel than that expounded by Lord Moynihan in his wonderful address delivered at Toronto. It is the business of those engaged in medicine, surgery, and the allied sciences to work together, and clinical observation, the Hippocratic method, must precede, accompany, and follow every stage in our work. There is a passage in your leading article (p. 806) which suggests that the writer has not fully appreciated the value of Lord Moynihan's message; this runs "for surgery to tell physiology what it ought to be interested in is as futile as for a physiologist to attempt to guide the surgeon." Surely it is not futile but most necessary for both physicians and surgeons to tell physiologists the problems that require elucidation, otherwise the physiologist, who has little or no clinical experience, will not know how his labours may advance our knowledge in most essential directions. I am certain that physicians and surgeons are only too eager to ha the guidance of the physiologists.

The attitude of mind shown in your leading arti is that which has so delayed the progress of medic in recent years. I hope that physiologists will real that the great mass of our profession is behind Lo Moynihan in the hope he expresses when he sa "We can surely do better in the future by bring the labourers in the various fields of medicine m closely together." With closer and more intim collaboration by physicians, surgeons, physiologis pathologists, and all other workers in our professi we should certainly present a stronger and more unit front to attack, and ultimately conquer the ravages the many baffling diseases which confront us.

I am, Sir, yours faithfully,

Bradford, Oct. 12th, 1930. WILLIAM H. THOMPSON.

LAXATIVES AND COLITIS.

To the Editor of THE LANCET.

SIR,—It is easy to sympathise with the difficult Dr. Green expresses regarding laxatives and coli I shall try to reply briefly to his points. Instead paraffin producing wasting (if there is wasting, it I fear, often due to other causes) it almost invaria happens that a patient with an unhealthy bo gains weight when put on paraffin. I have ne experienced retardation of digestion through the of paraffin, quite the opposite in fact, many digest disturbances vanishing under its use. If it produ digestive disturbance I submit it is being wron given; paraffin must be given not less than half hour *before* food. I have seen many bottles label "to be taken after food." This is asking for troul If taken an hour before all the better.

The second point is that paraffin must be assis and harmlessly assisted. It has no "kick" in itse and to my way of thinking that assistance sho come through the use of a physiological laxative laxative that does not act through sheer intesti irritation. The best laxative of this sort I have co across is the now well-known French preparat called Taxol pills; the formula is on each bot Of enormous help, of course—though not in its enough, as Dr. Green says, for the cure of constipat —is a correct diet, that is, one containing plenty "roughage"; doing a few special abdominal exerci every morning, the Hornibrook system being most effective; the drinking of as much fluid possible, and regular ordinary exercise. The gros sagging abdomen should be supported by a suita belt.

As nearly all these unhealthy colons exhibit spa in greater or lesser degree—and at times the deg is very great—the giving of from 7 to 10 mini of tincture of belladonna after breakfast and din enormously facilitates the onward passage of contents of the colon. In nervy subjects—and colitic individual frequently is nervy—10 grains sodium bromide given with the belladonna has sedative and useful effect—and on the colon t apparently.

As regards seepage; for the relief of this horri condition I have long since given up the use paraffin by itself, using instead a combination 75 per cent. pure Russian oil, along with 25 per cent Kaylene, the palatable emulsion resulting being kno as Kaylene-Ol. With this preparation seepage is ra if it does occur more Kaylene can be used. Kaylen the most effective adsorbent of intestinal poison know of, and sufficient can be given to prev

[5] Die Naturwissenschaften (p. 704), Berlin, 1923; and Verhandlungen Deutsch. Pharmak. Ges. (p .111), Leipzig, 1928.

seepage. In rare cases—and they are very rare in my experience—seepage will occur in spite of everything. Apart from seepage, in some 20 years I have come across only three or four genuine cases of patients really unable to take paraffin. With this type the form of emulsion mentioned will often get over the difficulty.

The audible gurglings, rumblings, and tenesmus mentioned by Dr. Green as being produced by the use of paraffin, can be easily got over by simultaneously employing the taxol pills and the belladonna. The taxols must be regulated to suit the individual patient—one, two, or three a day generally being enough to get two good actions daily, stopping short, of course, of all purging. It is in the combination of these three preparations that the virture and the excellent results got lie. If Dr. Green cares to try the combination I think, in his own words, he will find it of a harmless nature and yet efficient and confidence-giving.

I am, Sir, yours faithfully,

A. GRAHAM-STEWART.

Ulster-place, Upper Harley-street, N.W., Oct. 12th, 1930.

A DANGEROUS PHANTASY.

To the Editor of THE LANCET.

SIR,—Your annotation last week on the subject of my letter concerning the youth with homicidal phantasies brings out very clearly the defects in our legal procedure. It will be a matter for serious reflection to most people, I imagine, when they learn, as you point out, that there is no regular machinery by which mental abnormalities in an accused person can be brought to the notice of the court; and, secondly, that even if an examination were carried out and suspected disorder of mind brought to light, the court would be embarrassed by the difficulties of disposal and treatment. These facts constitute in themselves a sufficient indictment. It is, consequently, hardly necessary to draw attention to the further development in the case in question. From reports in the papers I see that the youth is again in the hands of the police, this time for setting fire to the training ship of which he was a member of the crew.

I am, Sir, yours faithfully,

FREDERICK DILLON.

Wimpole-street, W., Oct. 10th, 1930.

PRURITUS ANI ET VULVÆ.

To the Editor of THE LANCET.

SIR,—Mr. Lockhart-Mummery says he has read with interest the communication by Dr. Knuthsen and myself upon this subject, and feels strongly that our advocacy of X rays must be challenged. His vigorous challenge appeared when I was abroad, and has only just come to my notice. Dr. John McGinn has already replied to Mr. Lockhart-Mummery's condemnation of our views, but as I was responsible for the criticised section of the article I hope I may be allowed a few lines in reply.

1. Like Dr. McGinn I have treated many cases of pruritus ani et vulvæ with success and without any sign of cancer occurring from the treatment.

2. Mr. Lockhart-Mummery has a high and deservedly high reputation for surgical skill in the region under discussion, and had he given a surgical opinion I should have accepted it, but he cannot have had the training to make him a judge as to who is "thoroughly expert in the use of rays."

3. It would be a matter of interest to know what is the evidence for his assertion that there is "a special liability for the skin in the neighbourhood of the anus to undergo X ray burning in certain persons."

Surely the accepted view is that X rays have a special action on elementary embryonic tissue. Of course, the anal region is predisposed to malignant disease, but this is very different from X rays having a special action on it.

I am, Sir, yours faithfully,

London, Oct. 10th, 1930. F. HOWARD HUMPHRIS.

MARRIAGE OF DEFECTIVES.

To the Editor of THE LANCET.

SIR,—Much attention has been drawn in the press to the recommendation of the Board of Control put forward in its report for 1929 that the marriage of defectives should be prohibited by law. The object of prohibiting by law the marriage of defectives is to prevent their procreation. This end, however, can be realised (1) more effectively, (2) more humanely, and (3) less dangerously by making the marriage of defectives conditional on their sterilisation before marriage.

(1) *Effectiveness.*—It is well known that certain high-grade defectives are very fertile and have many illegitimate children. One of the acknowledged objects of marriage specified in the marriage service and applicable to normal people is that it acts as a deterrent from promiscuity. Why should not this also apply to defectives? If defectives are legally prohibited from marrying, the incentive to promiscuity will be increased and illegitimate children will be born. The measure will thus be ineffective in that it will promote illegitimate procreation by defectives.

(2) *Humanity.*—Many high-grade defectives have strong sexual needs. To deprive such persons of the right to express these needs in lawful marriage is hardly humane. Moreover, it is hardly in the interests of children to be born illegitimately by defectives.

(3) *Social Danger.*—Much is made by the opponents of sterilisation of the argument that the measure would result in the dissemination of venereal disease. But many who in one breath condemn sterilisation on these grounds in the next breath advocate the prevention of marriage of defectives as a means of limiting their fertility. Such persons are apparently unaware of the inconsistency between these two arguments. The increase in promiscuity which would follow from preventing the marriage of all defectives would clearly be accompanied by a dissemination of venereal disease. In this sense, the prevention of marriage of defectives would be socially dangerous.

We are, Sir, yours faithfully,

R. LANGDON-DOWN,
J. A. RYLE,
C. P. BLACKER.

London, Oct. 13th, 1930.

BENZYL-CINNAMATE.

To the Editor of THE LANCET.

SIR,—In reply to Dr. Jacobson we wish to say that, in our note on benzyl-cinnamate to which he refers, we had no intention of contesting the pioneer work done by him and others, being under the impression that it was widely known that he was the originator of this form of treatment. We did not give a history of the subject because we did not deem it necesary in so short an article dealing with the results of our cases.

We are, Sir, yours faithfully,

T. W. WADSWORTH.
J. T. FLANAGAN.

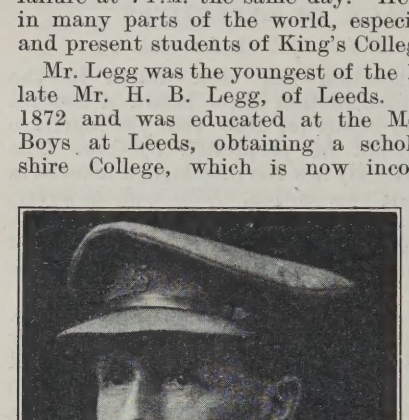
Liverpool, Oct. 11th, 1930.

OBITUARY

THOMAS PERCY LEGG, C.M.G., M.S. Lond., F.R.C.S. Eng.

Mr. T. P. Legg, who only returned from his summer holiday on Oct. 3rd, and spent the following Monday and Tuesday examining at the Royal College of Surgeons, was taken ill on the 8th, and died of heart failure at 7 P.M. the same day. He will be mourned in many parts of the world, especially by the past and present students of King's College Hospital.

Mr. Legg was the youngest of the 12 children of the late Mr. H. B. Legg, of Leeds. He was born in 1872 and was educated at the Modern School for Boys at Leeds, obtaining a scholarship to Yorkshire College, which is now incorporated in the University of Leeds. He entered St. Bartholomew's Hospital in 1889, and after qualifying M.R.C.S., L.R.C.P. in 1895, he held the post of house surgeon to Mr. Langton. He took the M.B. Lond. the next year, and the F.R.C.S. in 1897, being appointed Surgical Registrar to King's College Hospital in 1899. He was also made surgical tutor to the hospital, and became a successful and popular teacher. His appointment to the surgical staff of the Royal Free Hospital gave his teaching gifts further scope, and many students who passed through his hands at these institutions remember, with gratitude, the excellent ground-work which he gave them. In 1905 he was awarded the gold medal in surgery at the B.S. Lond. examination, and the next year he obtained the M.S. In 1910 Mr. Legg's appointment as assistant surgeon to King's College Hospital entailed his resignation from the Royal Free Hospital, where he had reached the senior staff and had collaborated with Sir James Berry in the preparation of the work on "Hare Lip and Cleft Palate," which became a classic. About this time Mr. Legg was also responsible, with his colleague, Mr. Arthur Edmunds, for the complete revision of Cheyne and Burghard's "Manual of Surgical Treatment." This task, completed in 1912, was a laborious one, for five big volumes had to be studied and brought up to date under the authors' critical and conscientious eyes.



MR. T. P. LEGG.

Photo by J. Russell & Sons.

At the outbreak of war Mr. Legg obtained a commission in the R.A.M.C., and worked at the 4th London General Hospital, which was attached to King's College Hospital. In 1915 he was drafted overseas to Mesopotamia, where he acted as consulting surgeon to the Forces in that district, with the rank of Colonel. He returned to London in 1919, having earned the C.M.G. for his services in the East. He was soon absorbed in the reconditioning of King's College Hospital; the army, which had occupied a considerable portion of the hospital, had left it in a chaotic condition, and Mr. Legg set to work, as a member of the Reconstruction Committee, to get the dilapidated wards into good order. At the hospital he was always known to the students as "the little man," and his popularity may be judged by the fact that he was a past president of the Listerian Society and of the Musical Society, and a vice-president of the Rugby Football Club. On Saturday afternoons he was a frequent and a keen spectator at the Rugby football matches. Mr. Legg was attached to several smaller hospitals as consulting surgeon, notably to the Italian Hospital in London, the Florence Nightingale Hospital, the St. Luke's Hospital, the Frimley and Farnham Cottage Hospital, and the Drury Lane Dispensary.

He served as an associate examiner in surgery to the University of London from 1921–23, when he was appointed to the Court of Examiners of the Royal College of Surgeons. He also examined at the University of Cambridge. He had may outside interests. He was the honorary editor of the Transactions of the Medical Society of London, a post which entailed a vast amount of work. He was this year's president of the Clinical Section of the Royal Society of Medicine, a member of the Council of the Surgical Section of that Society, and a past member of the Council of the Harveian Society of London. All these activities demanded time. Mr. Legg often worked until the small hours of the morning.

Mr. Arthur Edmunds writes: "Legg was essentially a lovable man. He never sought a surface popularity or tried to make friends by agreeing with everybody, but by his sincerity and unselfishness won the respect of all those whom he met. Those who knew him as a professional colleague held him in high regard, those who knew him in his private life esteemed him still more. His life was full: private practice, hospital work, organising operating and teaching, the conduct of examinations, and his activities in connexion with professional societies made him a busy man, but he never allowed his work to obsess him. He retained a youthful outlook upon life, and a keen sense of humour, and enjoyed social life among his many friends. He never gave up his interest in sport; like most Yorkshiremen he was, in his young days, a cricketer; and though later he gave up playing cricket and took to golf he retained his interest in the game. He was a regular attendant at the students' games at King's College Hospital, especially at football matches. His professional work was marked by extreme detailed thoroughness, not only in the performance of operations, but in the preliminary examination of his patient, and in their after-treatment. No trouble was too much for him to take, and his personal convenience or even health was never considered when a patient needed him. For any who were in trouble, whether friend or patient, Legg had abundant sympathy, and in his own sorrows and pain he showed fine courage. He read widely, but was never carried away by ephemeral teaching. He weighed new methods and, when he was convinced that a definite improvement had been introduced, adopted it at

once. His teaching was like his work, sound, detailed, and straightforward, and any student who passed through his hands had only himself to blame if he failed to get a thorough grasp of the principles of surgery. We all loved him, and his going leaves us dismayed."

CHARLES B. MAUNSELL, M.B. Dub.,

PAST PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS IN IRELAND.

Mr. Maunsell's sudden death in London on Oct. 7th came as a shock to his friends, few of whom knew that he suffered from any ill-health. He had nearly completed his fifty-eighth year.

Born in Co. Galway, and educated at the High School, Dublin, and Trinity College, Robert Charles Butler Maunsell qualified in medicine and surgery in 1894. He spent a year as house surgeon in Sir Patrick Dun's Hospital, and while still very young was appointed to the visiting staff of Mercer's Hospital as one of the surgeons. In 1900 he was admitted a Fellow of the Royal College of Surgeons in Ireland, and in 1904 was elected a member of the Council of the College. In 1922 he was elected Vice-President, and in 1924 President. During the war he was, for a time, one of the surgeons to the Dublin Castle Red Cross Hospital, and also served as surgical specialist in "83 (Dublin) General Hospital" at Boulogne with the rank of major in the Royal Army Medical Corps. He was consulting surgeon to the Royal Hospital for Incurables, Dublin, and to the Cottage Hospital, Drogheda.

Maunsell's main professorial work was done in connexion with Mercer's Hospital, and the position now enjoyed by that hospital in the Dublin School of Medicine is largely due to his influence and example. At the time of his appointment the hospital had fallen on evil days, and some of Maunsell's friends tried to dissuade him from linking his fortunes with what appeared to be a moribund institution. He had, however, sufficient confidence in himself to believe that he could do good work even under adverse conditions, and within a few years he—with his colleagues—altered the conditions. How good his work was few except those who saw it realised. "Maunsell," writes one of these colleagues, "was a great surgeon. In him diagnostic ability, keen clinical acumen, surpassing skill and technique combined to a degree which placed him in the forefront of surgeons. Withal, his calmness, unruffled under emergency however great, produced a consistency of standard which never varied, whether the task was a minor one or one of great magnitude. His interest in a patient never flagged from the day of admission to hospital until the day of departure. No detail was too insignificant for him, and he never deputed to others the tasks imposed on him by his work. In an age of specialisation, he was equally versed in all branches of surgery."

In public affairs Maunsell seldom took part, for he disliked the limelight though never shirking responsibility. On one occasion it fell to his lot to play a part of considerable importance which has left its mark in Irish medical history. He occupied an important position in the counsels of the Royal College of Surgeons at the moment when the Government of the Irish Free State declared its intention of establishing a medical register for the State. He disliked the change, and expressed his hostility openly, but when he realised that a change was inevitable he set himself to find a solution which would not injure Irish medical education. The plan which the Government ultimately adopted and made law was, in all its main features, drafted by him. Maunsell himself had been, since 1928, a member of the Medical Registration Council thus established.

Of his personal characteristics, the most striking features were unfailing kindness, lack of ostentation, and a native dignity which conferred honour on his profession. To many he appeared aloof, but this was due to a disinclination to indulge in minor conversational commonplaces. Behind his quietness there was a great firmness in regard to just principles. Many men appear to take a more prominent place in the world than did Maunsell, but when they go their places are soon filled. His untimely death has left a vacant place in Dublin surgery.

PANEL AND CONTRACT PRACTICE

A Medical Service for the Nation.

A LETTER from Dr. Geoffrey Evans calls attention to our correspondence columns to the growing public interest in the institution of a State medical service. There are, he says, many people who now believe that a State medical service offers the best opportunities for promoting the health and well-being of the people, while he suggests that the predilection is growing among those who have not realised the existing control of medical practice by the State, and thus have no reason to fear the pressure or over-pressure of bureaucracy. Dr. Evans analyses the difficult position created by the admitted need for the improvement, in the interests of the public and the profession alike, of medical practice as it is to-day carried on; and he finds that the proposed extension of professional service under the National Insurance Acts will have neither of these results. His own proposal to meet the position would imply a real development of the status of the practitioner along independent lines; the view that a State medical service, while perhaps improving the average practice of medicine, would reduce the level of the best, is held by most practitioners at least as yet. Dr. Evans's essential message is to the whole medical profession that they should observe the growing public bias towards a State service and should realise the severing of intimate relations with patients, as well as the drawback to scientific advance, that such a service may imply.

Ten Years' Work in Scotland.

Miss Muriel Ritson, controller of insurance to the Scottish Department of Health, addressing the Scottish Association of Insurance Committees at Inverness, said the time was opportune for a general stocktaking of our health administration. Ten years ago the Scottish Board's consultative council had reported on the systematised provision of medical and allied services. How far, she asked, had we travelled along the lines of its recommendations? First, there had been a great unification of local machinery. Two bodies and two only now provided health services, the insurance committee and the newly constituted local authority. The old medical service given under the poor-law could henceforth be given by the public health committee of the new authority. Never again would there be the old conflict of interests. In Scotland certain developments had taken place in organising diagnostic

and specialist consulting services, and in increasing out-patient accommodation in hospitals and clinics where such services were obtainable. The hospital services had been to some extent coördinated and enlarged. The number of district nurses had been doubled. Finally, a dental service had been provided for a large part of the insured population; school and pre-school dental clinics had been developed under the local authorities. Some features in the national insurance scheme were equally encouraging. Cash benefits had increased. Additional benefits such as dentistry and ophthalmic treatment had been introduced. The regional medical officer service had come into being and was being slowly extended. The drug bureau was widening its sphere of usefulness. Lastly, the collection of morbidity statistics was pointing the way to the causes of incapacity. Approved societies had loyally shouldered the burden of making the regular returns necessary for compiling these statistics; doctors in their turn would, she hoped, reciprocate by showing readiness to coöperate. Wherein, then, had our provision failed? There are, Miss Ritson said, too many insured persons in cities attending hospital out-patient departments for treatment which ought to be given by their panel doctor; for his part he found difficulty in obtaining from these hospitals the necessary reports and advice. Extravagance in any shape or form must be avoided. Extension of benefits in the past had created a false impression of security; but in fact, every certificate of incapacity issued in the absence of real incapacity drove a nail into the coffin of our hopes of giving a wider service to the genuinely sick. In the results of the new statistical scheme, certain areas and certain practitioners stood out as high certifiers in a quite inexplicable way. These differences between area and area, between practitioner and practitioner, must be explained if the whole financial structure of the service was to be based on the careful and conscientious use of both drugs and certificates.

Reports by Sick Visitors.

Mr. F. A. Goodwin, hon. sec. of the Association of Approved Societies, states in a letter to the *National Insurance Gazette* of Oct. 11th that the proper method of dealing with excessive sickness experience is to provide efficient visitation. For many years his association has endeavoured to obtain for its affiliated societies reports from sick visitors, and he submits that if all groups of approved societies would assist in compiling a register of sick visitors to cover the country completely, so that every person declared sick could be visited within a few days, the first step towards the reduction of claims would have been taken and the societies would be guided in their decisions when to ask help from the regional medical officers. In an editorial note the *Gazette* endorses this suggestion which is regarded as an economical proposition. Should the societies not undertake this duty themselves it is feared that the department may set up a scheme of its own.

Efficient Rural Service.

Mr. P. F. Rowsell, chairman of the Devon Insurance Committee, has replied to Mr. Bevin's allegation that all they got under the panel system was "very casual treatment." As far as Devon was concerned, he said, this was not the case. If there were complaints of casual work, the insurance committee would receive them; they had, in fact, received no complaints of casual treatment. Mr. Bevin's statement was one, he thought, that should be nailed down as incorrect.

Cheshire and Extension to Dependants.

A recent quarterly meeting of the local medica and panel committees for the county of Cheste discussed the proposals for a general medical servic for the nation and passed a resolution against an extension of the Insurance Acts to the dependant of insured persons. The scheme, said Sir Willian Hodgson (chairman), would set up a band of specialist when what was wanted was to preserve the right o the general practitioner to undertake for himsel every variety of special work for which he is competent Dr. L. J. Picton (secretary) said the object-lesson wa the limitation of ophthalmic work to a special panel If there were to be a similar limitation of othe departments of practice the range of a doctor' activities would be very much curtailed. Dr. J Kerr remarked with concern that younger men wer in favour of a systematisation of practice with it limiting conditions but assured income.

Cost of an Extended Service.

Mr. J. Hutton (Redcar), speaking on Oct. 10t from the chair of the annual conference of Healt Insurance Committees, expressed approval of th proposals of the British Medical Association for national medical service. The cost of providin medical benefits for dependants of insured perso had been estimated by the Minister of Health a £10,000,000, and he believed there was no wish o the part of the Association to burden the State wit the whole cost. All that was needed, he said, wa an extension of the present system of organise medical benefit on a flat rate of payment by increasin slightly the rates of contribution. He pictured a extended medical service so complete as to sav educational authorities the expense of examining an treating school-children. Later in the day Mr. A Cook (Lancashire) put the expense of providing laboratory service at a farthing a year for eac insured person. This was, he said, the experienc of the Lancashire Insurance Committee during it four years' experiment which was cut short b Section 4 of the amending Act of 1928. Lor Cozens Hardy had on the previous day suggeste that extension of medical benefit could not be rule out on account of its cost until it was seen whethe the State could not be recouped in other directions

THE SERVICES

ROYAL ARMY MEDICAL CORPS.

Maj. J. D. Bowie retires on retd. pay, and is granted th rank of Lt.-Col.

The undermentioned to be Lts. (on prob.): S. W. Smi and J. M. Officer.

ARMY RESERVE OF OFFICERS.

The undermentioned having attained the age limit liability to recall, cease to belong to the Res. of Off Lt.-Cols. J. H. Robinson and H. G. Pinches.

ROYAL AIR FORCE.

The undermentioned officers are granted permane commission in the ranks stated: Flight Lieutenant R. E. Alderson, G. W. Paton, P. B. L. Potter, and S. B. Smith. Flying Officer: N. M. Jerram.

Dental Branch.—Flight Lt. (Hon. Squadron Leade E. A. Wheeler (Temp. Maj., Gen. List, Army, Dent Surgeon) is transferred from the Army to the R.A.F.

RESERVE OF AIR FORCE OFFICERS.

Flight Lt. J. A. Quin relinquishes his commission account of ill-health.

INDIAN MEDICAL SERVICE.

Lts. R. D. Alexander, S. C. Bakhle, and H. W. Farr (prov.) to be Capts.

MEDICAL NEWS

Royal College of Surgeons of England.

A quarterly meeting of the Council was held on Oct. 9th, with Lord Moynihan, the President, in the chair. A resolution of condolence was passed on the death of Mr. T. P. Legg, a member of the Court of Examiners.

The Diplomas of Membership were conferred on H. R. Hovsha (King's College), A. H. Lendon (Adelaide), D. K. Mulvany (King's College), and A. L. Devi (Punjab and Royal Free).

The honorary gold medal of the College was presented to Mr. R. Lawford Knaggs. Mr. W. R. Le Fanu was admitted to the office of librarian. Mr. L. J. Honeywill, of Bournemouth School, was admitted as the first Macloghlin scholar. Mr. F. B. Kiernander, of Epsom College, was nominated as the thirty-eighth Jenks scholar.

The President reported that the Thomas Vicary lecture, on Vicary's Predecessors, would be delivered by Prof. G. E. Gask at 5 P.M. on Thursday, Nov. 6th, and that the Bradshaw lecture, on Ocular Muscles, Movements, and Judgments, would be delivered by Mr. J. Herbert Fisher at 5 P.M. on Thursday, Nov. 13th.

University of London.

At examinations recently held at the London School of Hygiene and Tropical Medicine the following candidates were successful:—

ACADEMIC DIPLOMA IN PUBLIC HEALTH.

H. M. P. Bond, A. C. Easterbrook, L. C. Harbans, M. H. James, H. D. Jhingan, W. P. Jones, Donald Magrath, E. A. Straker H. B. Sutherland.

Donald Ross passed only in Part I.

University of Liverpool.

At recent examinations the following candidates were successful:—

DIPLOMA IN PUBLIC HEALTH.

H. R. Dugdale, J. D. A. Gray, R. Krishna, H. S. Lawrence, J. Macdonald, E. S. R. Menon, Nora M. Wilson.

University of Manchester.

At an examination recently held the following candidates were successful:—

DIPLOMA IN PUBLIC HEALTH (*Part II.*)

A. H. Heyworth, Frances A. Hogben, Andrew Meiklejohn.

University of Dublin.

The Montgomery lecture in ophthalmology will be delivered on Thursday, Oct. 30th, at 5 P.M., by Dr. Francis S. Lavery, his subject being Trachoma with special reference to its Sociological Aspect.

University of Oxford.

After holding the Office of Dean of the School of Medicine for over eight years, Dr. E. W. Ainley Walker has resigned from the post. His successor is Dr. M. H. MacKeith, whose official address is at the Department of Medicine, University Museum, Oxford.

Royal Medical Benevolent Fund.

The annual service in aid of this Fund will be held at 3 P.M., on Oct. 19th, at Liverpool Cathedral, when the preacher will be Mr. G. J. Howson. Archdeacon Warrington, the Lord Mayor and Lady Mayoress will attend. Members of the medical profession, and their friends are cordially invited to this service, for which tickets may be obtained from the hon. secretary at 28, Rodney-street, Liverpool.

Royal Faculty of Physicians and Surgeons of Glasgow.

At the monthly meeting of the Faculty, held on Oct. 6th, four Honorary Fellows of Faculty were admitted: Prof. Robert Muir, Dr. W. L. Reid, Lieut.-Colonel L. A. Waddell, I.M.S. (retired), and (*in absentia*) Prof. K. F. Wenckebach, of Vienna. In welcoming Prof. Muir, professor of pathology in the University of Glasgow, the President of Faculty, Dr. John F. Fergus, referred to the large number of Prof. Muir's old students and assistants who had been called on to fill chairs of pathology, not only in this country, but abroad. In admitting Dr. W. L. Reid, the President spoke of the high position he had occupied in obstetrics and gynæcology, in the scientific development of which he had been a pioneer. Of Colonel Waddell, the President noted that in spite of his military, administrative, and academic duties as an officer, as professor of pathology in the Medical College, Calcutta, and as Deputy Sanitary Commissioner, he had found time to make himself a recognised authority in the domains of archæology and ethnology. The President expressed regret that Prof. Wenckebach was unable to be present. His researches into cardiac disorders, notably the irregularities of the heart, had brought him world-wide fame.

Royal Institution of Great Britain.

Among the afternoon lectures to be delivered during November and December are two lectures on New Aspects of Radio-activity, by Mr. C. D. Ellis, F.R.S.; two on the Physiology of Water, by Prof. J. B. S. Haldane; and two on Colour Vision, by Mr. L. C. Martin.

A MEMORIAL tablet to the memory of the late Mr. W. Howard Hazell will be unveiled in St. Bride's Church, Fleet-street, E.C. 4, by the Lord Mayor, Sir William Waterlow, and will be dedicated by the Rev. A. Taylor on Wednesday, Oct. 29th, at 3.30 P.M.

British Institute of Philosophical Studies.

The first evening meeting for the session will be held at the Royal Society of Arts, 18 John-street, Adelphi, London, W.C. 2, on Oct. 14th, at 8.15 P.M., when Sir Percy Nunn will lecture on the Philosophy of Prof. Whitehead.

Guild of St. Luke.

The annual service of this Guild will be held at St. Paul's Cathedral on Oct. 21st, at 8 P.M. Seats will be reserved for medical practitioners and students, who are invited to attend whether or not they are members of the Guild. Those wishing to take part in the procession should robe in the Chapel of St. Michael and St. George. The Guild of St. Luke was founded in 1864 by medical students primarily in order to help them in the special difficulties of a medical student's life. Membership of the Guild is open to students and practitioners of medicine who are communicants of the Church of England. Tickets for the service and further particulars concerning the Guild may be obtained from the Guild secretary, Dr. Andrew Currie, 20, Oxford-terrace, London, W. 2, or from the secretary of the women's ward, Dr. Dorothea Brooks, 65, Park-road, Battersea, London, S.W. 11.

Chadwick Public Lectures.

Three lectures on Rheumatism will be given at the B.M.A. House, Tavistock-square, on Oct. 23rd and 30th and Nov. 6th at 5.15 P.M. respectively by Dr. Francis Bach, Dr. Gerald Slot, and Dr. M. B. Ray; the latter will repeat his lecture at Gateshead Town Hall on Nov. 21st. Other public lectures organised by the Chadwick Trust for this session include one by Mr. J. H. Coste on the Object and Methods of Sewage Treatment, to be given in London on Nov. 14th and at Reading in December. On Nov. 28th, at 5.30 P.M., at the house of the Royal Society of Arts, John-street, Adelphi, W.C. 2, Sir Robert Philip will give the Malcolm Morris memorial lecture on the Outlook on Tuberculosis; Changing Orientation. Further information about these lectures, to which admission is free, may be obtained from the secretary at 204, Abbey House, Westminster, London, S.W.

Medical Sickness Annuity and Life Assurance Society, Limited.

The annual general meeting was held on Oct. 8th at the First Avenue Hotel, Dr. F. C. Martley, the chairman, presiding. He referred to the loss sustained by the society in the death of Dr. Charles Buttar, and said that Dr. G. de Bec Turtle had been appointed to fill the vacancy on the Board. Dr. F. J. Allan retired from the chair after 17 years' service, but was re-elected a director, as was also Dr. W. K. Sibley and Dr. de Bec Turtle. The society had had a successful year in spite of the general financial depression. The practice purchase loans scheme continued to grow, and its success was undoubted. All instalments had been repaid and no bad debts had been incurred. The house purchase scheme had been somewhat revised, and as presented would, he thought, meet the requirements of medical men purchasing their houses through the society. The amount paid in sickness benefit during the year was £1300 less than the previous year, and the premium income had increased by over £6000. The experience was about 67 per cent. of the expectation, which was the same as the previous year. At the last annual meeting the directors, at the request of the members, had agreed to consider the extension of permanent sickness insurance to the age of 70. The actuary had, however, reported adversely on the proposal, and they had felt bound to follow his advice. New life assurance had been completed for £281,000, and the total sums assured had grown from £182,042 in 1922 to £1,368,716. thus showing that the profession was appreciating the advantages given. The sickness and life funds had increased by £64,150, and now stood at £670,635. The total funds of the society were £694,770. The Board had decided to place the staff pension fund under trustees.

National Institute of Industrial Psychology.

Lord D'Abernon has accepted the office of President of the Institute in succession to the late Earl of Balfour, its first president.

Harrow Hospital, Harrow-on-the-Hill.

The new nurses' home, which is called Florence Nightingale House, will be opened by Miss Diana Churchill to-day (Saturday).

Contraception and Allied Questions.

A course of lectures organised by the Royal Institute of Public Health on this subject will be delivered at the Institute, 37, Russell-square, London, W.C., between Oct. 9th and Dec. 11th. Admission is restricted to members of the medical profession and senior medical students. Among the lecturers will be Dr. C. Killick Millard, Dr. C. P. Blacker, Mrs. Marie C. Stopes, D.Sc., Dr. Maude E. Kerslake, Mr. Harold Chapple, and Dr. F. J. McCann.

Alexandra Day Distribution.

At a meeting last week of the Administrative Committee of the Alexandra Day Fund it was reported that the collections in London on Alexandra Day this year amounted to £50,943, to which £4097 was added to from steamship and other contributions. The expenses were £9441, of which £7744 represented the cost of the artificial roses. The committee distributed £40,815 among hospitals, dispensaries, homes and kindred institutions, and carried forward the balance to next year.

Post-graduate Lectures on Cancer.

The Yorkshire Council of the British Empire Cancer campaign has arranged the following lectures for medical practitioners: Sir Almroth Wright, F.R.S., on Medical Research, at the Medical School, Leeds, at 3.30 P.M. on Wednesday next, Oct. 22nd; Prof. Beckwith Whitehouse, on Uterine Hæmorrhage with special reference to Malignant Disease, at the Halifax Infirmary, at 3.30 P.M. on Nov. 26th; Dr. Ronald Canti, showing his Cancer Film, at the Alexandra Picture House, Camp-road, Leeds, on Feb. 4th, 1931, and Mr. Ernest Miles, on the Symptomatology and Treatment of Cancer of the Rectum, at the Royal Infirmary, Huddersfield, on March 5th.

Guild of St. Luke, St. Cosmas, and St. Damian.

The general meeting of this Guild of Roman Catholic doctors and students will be held in the Cathedral Hall, Archbishop's House, on Sunday, Oct. 19th, immediately after the High Mass at Westminster Cathedral, which is celebrated at 10.30 A.M. The annual report of the Council records the activities of the year. The London meetings have been held with regularity and have been fully attended, and regular meetings have also been held in Bath and Bristol, Liverpool, Manchester, Wolverhampton, Glasgow, and Preston. The officers suggested by the Council for 1930 are: Mr. Ernest Ware as master, Mr. Charles Goulden as hon. treasurer, and Dr. W. J. O'Donovan as hon. secretary.

International Society of Orthopædic Surgery.

The first Congress of this Society was held in Paris on Oct. 2nd, 3rd, and 4th, under the presidency of Sir Robert Jones. On the occasion of its foundation in October, 1929, it had been decided that the Society should have a limited membership, ten members only being allotted to the United States, Great Britain, France, Germany, and Italy. At the Congress it was generally felt that the number of representatives from certain of the smaller countries ought to be increased, but on the question of a large expansion of the total membership there were sharp differences of opinion. It was eventually decided to authorise a modest increase in the quota from each country for the next Congress, which is to be held in London three years hence, with Prof. Nové-Josserand, of Lyons, as President. Dr. Murk Jansen, of Leiden, was elected vice-president, in addition to those already holding office—Prof. Gocht, of Berlin, and Prof. Putti, of Bologna. At the opening scientific session on Oct. 3rd Sir Robert Jones gave his presidential address on the Domain of Orthopædic Surgery. This was followed by a discussion on the treatment of congenital dislocation of the hip after the age of 15, the official reporters being Prof. Kreuz, of Berlin; Dr. F. Dickson, of Kansas City (in the absence of Dr. F. Gaenslen, of Milwaukee); Mr. H. A. T. Fairbank, of London, and Prof. Putti. Various members took part, all the five official languages of the Society being spoken. On the next day the subject for discussion was injuries of the wrist-joint, introduced by Dr. Albert Mouchet, of Paris, and Dr. Murk Jansen. Operations were performed on two mornings by Prof. Ombrédanne and Dr. Mathieu. Sir Robert Jones presided at the official banquet on Oct. 2nd at the Union Interalliée, and in the single speech of the evening, despite the difficulties of language, managed to delight the whole company.

Leicestershire Hospitals.

Princess Helena Victoria last week opened extensions of the Melton Mowbray War Memorial Hospital which have cost £17,500. The enlargements include two wards of eight beds each, a new operating theatre and the necessary appurtenances, all on one floor. The men's wards and the private wards are in the original building which now becomes in the main an administrative block. Last week also Sir Edward Packe opened the first instalment of an enlargement of Loughborough Hospital which, when completed, will cost £40,000.

Torquay and District Medical Society.

The opening meeting of the session will be held at the Torbay Hospital on Oct. 16th, at 4.30 P.M., when a paper will be read by Dr. Langdon Brown on the Present Position of Endocrinology. On Nov. 20th Dr. J. Halliwell will deliver his Presidential Address, and other lectures to be given during the session include the following: Dr. R. A. P. Hill on Electrocardiography, Prof. J. M. Woodburn Morison on Treatment of Cancer by Radiations, Mr. J. Howell on the Chief Use of the Peritoneum, Dr. B. Venn Dunn on Dysmenorrhœa, and Mr. E. W. Hey Groves on Art and Nature in the Repair of Fractures.

A Swindon Radio-Clinic.

A clinic for electro-medical and ray therapy was opened last week at Milton-road, Swindon, as an addition to the existing medical and surgical activities of the Great Western Railway Medical Fund Society. The plant has been installed for the time being in a portion of the washing baths specially set apart, but when the maternity home has been transferred to Kingshill, as it soon will be, the clinic will occupy the present home. The idea of the clinic originated with Dr. S. J. C. Mackay; treatment is to be chiefly remedial but prophylactic work may also be undertaken. Patients at present are seen at certain hours, but it is expected that the clinic will become a whole-time institution. It is available for non-members recommended by their own doctors.

British Empire Cancer Campaign.

Sir Charles Gordon-Watson presided at the quarterly meeting of the Grand Council held on Oct. 13th at 12, Grosvenor-crescent, London, S.W. 1. On the recommendation of the Scientific Advisory Committee a further grant of £150 was made to Dr. J. C. Mottram, pathologist at the Radium Institute, London; £300 to Mrs. E. K. Dawson, M.B., of Edinburgh, for the continuance of investigations into mammary cancer, and £250 to Mr. E. Nevill Willmer at the Physiological Laboratory, Cambridge University. An application for affiliation from the Natal Radium and Anti-Cancer Fund, South Africa, was acceded to, thus completing the representation of the British Empire Cancer Campaign in the British dominions. A popular book on cancer had been approved, and will shortly be published by Messrs. John Murray.

Donations and Bequests.

Mr. Hugh Morton, of Moseley, Birmingham, left, among other bequests, £25,000 (exclusive of the share in the residuary estate) to Birmingham University, as to £20,000 to be applied in the discretion of the Council of the University for such special or general purposes as the Council may see fit; £1250 each to the Birmingham and Midland Hospital for Women and the Birmingham General Hospital, for the dedication of beds; and £1000 to the Moseley Hall Convalescent Hospital for Children for a similar purpose. Subject to numerous specific bequests he left the residue of his property as to one-half to the University of Birmingham, to be applied for such general or special purposes, one-fourth to the Birmingham General Hospital, and one-fourth to the Queen's Hospital, Birmingham.—The will of Mrs. Fannie Abrahams, of Westbourne Terrace-road, Paddington, includes bequests of £2000 to the Royal College of Physicians of London for founding a lectureship in physiology in memory of her son, Bertram Louis Abrahams; £1000 to the Westminster Hospital; £2000 to the London Hospital; and £1000 to the East London Hospital for Children for beds in memory of herself, her son, and her daughter.—The Leicester Royal Infirmary will receive £1000 under the will of Miss Annie Elizabeth Clephan, of Regent-road, Southfields, Leicestershire.—Mr. John Herbert Taylor, of Turner's Hill, Sussex, left £6000 in trust for his sister, Laura Worsley Taylor, for life, with remainder in equal shares to Penrith Cottage Hospital and Cumberland Infirmary; £1000 to the London Hospital; and £500 to the East Grinstead Cottage Hospital.—Mrs. Jane Gabriel, of Porchester-terrace, Hyde Park, left £5000 to the Jewish Hospital and Orphan Asylum, and £500 each to St. Mary's Hospital, Paddington, Charing Cross Hospital, Brompton Hospital for Consumption, and the Jewish Home for Incurables.

Westbury Cottage Hospital.

This hospital is being rebuilt at a cost of £10,000, and recently Lady Sybil Phipps laid the foundation-stone. The foundation-stone of the existing hospital was relaid on the new site by Mr. W. H. Laverton, the senior trustee.

Reconstruction of Lytham Hospital.

This institution, which has been entirely rebuilt at a cost of £27,000, was recently reopened by Lord Derby. When the work came to a standstill three years ago for lack of money, the late Mr. E. W. Mellor, the chairman of the hospital, gave £15,000, and his widow has now given a further £1500 to enable the building to be opened free from debt. Provision has been made for 26 patients; in addition, the maternity block will accommodate six patients in the public ward and three in private wards.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Oct. 21st.—5.30 P.M., GENERAL MEETING OF FELLOWS to fill the vacant post of junior honorary librarian, 8 P.M., PATHOLOGY. Prof. E. H. Kettle: The Relation of Dust to Infection. (Presidential address.)

WEDNESDAY.—5 P.M., COMPARATIVE MEDICINE. Mr. G. H. Wooldridge: Presidential address. Demonstration: Mr. J. G. Wright: Anæsthesia in Small Animals by Intracolonic Administration of Avertin.

THURSDAY.—8.30 P.M., UROLOGY. Mr. S. G. MacDonald: The Results of Partial Resection of the Bladder for Carcinoma. (Presidential address.)

FRIDAY.—5 P.M., DISEASE IN CHILDREN. (Cases at 4.30 P.M.) 8 P.M., EPIDEMIOLOGY. Prof. Major Greenwood: Public Health Education. (Presidential address.)

HUNTERIAN SOCIETY.

MONDAY, Oct. 20th.—7.30 P.M. (at Simpson's Restaurant, 2 and 3, Bird-in-Hand-court, 77, Poultry, Cheapside). First Dinner Meeting. 8.30 P.M., Prof. A. W. Sheen: The School of Health. (Presidential address.)

MEDICO-LEGAL SOCIETY, 11, Chandos-street, Cavendish-square, W.

THURSDAY, Oct. 23rd.—8.30 P.M. (at 11, Chandos-street, Cavendish-square, W.), Dr. Letitia Fairfield: Women Mental Defectives and Crime: a Practical Study. To be followed by a discussion.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

BRITISH EMPIRE CANCER CAMPAIGN POST-GRADUATE LECTURES ON CANCER.

WEDNESDAY, Oct. 22nd.—3.30 P.M. (in the Medical School, Leeds), Sir Almroth Wright: Medical Research.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Oct. 20th, to SATURDAY, Oct. 25th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. Special M.R.C.P. Lecture at 8.30 P.M. as follows: Tues., Dr. L. S. T. Burrell: Bronchiectasis and Abscess of the Lung; Fri., Dr. Donald Hunter: Diseases of Calcium and Phosphorus Metabolism and of the Parathyroids. Mon., 4 P.M., a free lecture by Mr. John Hunter on Recent Advances in Surgery of the Chest.—ST. MARK'S HOSPITAL, City-road, E.C. Tues., 3.30 P.M., free demonstration (ward round) by Mr. L. E. C. Norbury.—EAST LONDON HOSPITAL FOR CHILDREN, Shadwell, E. Wed., 10 A.M., free demonstration (wards) by Dr. Hazel Chodak Gregory.—CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S.W. Second week of special course in gynæcology.—HOSPITAL FOR TROPICAL DISEASES, 25, Gordon-street, N.W. Third week of special course in Tropical Medicine.—CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road. Third week of special course in Diseases of the Throat, Nose, and Ear.—Further particulars from the Fellowship of Medicine.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Oct. 20th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose and Throat Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Throat and Ear Clinics. Operations.

FRIDAY.—10.30 A.M.: Ear, Nose, and Throat Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Children's Diseases Clinics. Operations.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, Oct. 20th.—12 noon, Dr. Greenfield: The Neuroglia. 2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Hinds Howell: Disseminated Sclerosis.

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Bernard Hart: Some Aspects of the Psychoneuroses.

WEDNESDAY.—2 P.M., Dr. Purdon Martin: Out-patient Clinic.

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Walshe: Multiple Neuritis.

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Sir Percy Sargent: Spinal Injuries.

CHADWICK PUBLIC LECTURES.

THURSDAY, Oct. 23rd.—5.15 P.M. (in the Hastings Hall, B.M.A. House, Tavistock-square, W.C.), Dr. Francis Bach: Rheumatism, Cause and Prevention. (First of three lectures.)

KING'S COLLEGE, Strand, W.C.

THURSDAY, Oct. 23rd.—5 P.M., Mr. J. A. Hewitt, Ph.D., D.Sc.: Metabolism of the Carbohydrates and Fats (second of four free lectures).

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark Hill, S.E.

THURSDAY, Oct. 23rd.—9 P.M., Mr. St. J. D. Buxton: Surgical Aspects of "Backache."

UNIVERSITY COLLEGE, Gower-street, W.C.

MONDAY, Oct. 20th.—5 P.M., Dr. H. P. Gilding: The Reticulo-endothelial System (second of four free lectures).

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, Leicester-square, W.C.

TUESDAY, Oct. 21st.—5 P.M., Dr. W. N. Goldsmith: Anatomy and Physiology of the Skin.

THURSDAY.—5 P.M., Dr. J. M. H. MacLeod: Morphology and Histopathology of Elementary Lesions.

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY.

WEDNESDAY, Oct. 22nd.—4.15 P.M. (at St. John's Hospital, 49, Leicester-square), Clinical Cases.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION. St. James' Hospital, Ouseley-road, Balham, S.W.

WEDNESDAY, Oct. 22nd.—9 P.M., Major Stevens: Nepal Film (taken by the Ross Institute Malarial Expedition).

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, Oct. 22nd.—4.30 P.M., Mr. W. K. Irwin: The Diagnosis and Treatment of Some Important Bladder Conditions.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

WEDNESDAY, Oct. 22nd.—4 P.M., Prof. W. S. Lazarus-Barlow: Prevention of Pre-Cancerous States and the Arrest of Cancer.

THURSDAY.—4 P.M., Mr. Alfred Goodman: Some Medico-Legal Aspects of Contraception.

GRESHAM COLLEGE, Basinghall-street, E.C.

TUESDAY, Oct. 21st, and the three following days, at 6 P.M., Sir George Newman: Programme of a National Health Service. (Public lectures.)

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, Oct. 21st.—4.15 P.M., Dr. C. H. Melland: Pernicious Anæmia: Latest Developments.

FRIDAY.—4.15 P.M., Mr. W. Woods: Tuberculosis: The Veterinary Side.

ANCOATS HOSPITAL, Manchester.

THURSDAY, Oct. 23rd.—11 A.M., Mr. E. E. Hughes: Clinical Demonstration. 4.15 P.M., Dr. W. J. S. Reid: Disorders of the Autonomic Nervous System.

Appointments

DAVIES, H. S., L.R.C.P. Lond., M.R.C.S., has been appointed Resident Anæsthetist to Queen Charlotte's Maternity Hospital.

GORDON, JOHN A., M.B., Ch.B. Aberd., O.P. Medical Officer to the National Hospital for Diseases of the Heart.

STOPFORD-TAYLOR, R., M.B., Ch.B. Liverp., Hon. Dermatologist to the Liverpool Royal Infirmary.

Certifying Surgeons under the Factory and Workshop Acts: BAIRD, W., M.B., Ch.B. Glasg. (Glenluce District, Wigtown); SUTHERLAND, R. K. S., M.B., Ch.B. Edin. (St. Margaret's Hope, Orkney).

Vacancies

For further information refer to the advertisement columns.

Aberdeen Royal Mental Hospital.—Jun. Asst. Phys. £250.
Auckland, New Zealand.—Sen. Asst. Pathologist. £750.
Bedford County Hospital.—H.S. At rate of £175.
Birmingham and Midland Eye Hospital, Church-street.—Asst. S.
Birmingham and Midland Nerve Hospital.—H.P. £70.
Birmingham, Selly Oak Hospital.—Part-time Radiologist. Also Part-time Dental Surgeon.
Birmingham City.—Asst. M.O.H. for Maternity and Child Welfare. £600.
Bradford Royal Infirmary.—H.P. and H.S. Each £150.
Brighton, Royal Sussex County Hospital.—Sen. Asst. Pathologist to Special Depts. £400. Also H.P. £150.
Brighton, Sussex Maternity and Women's Hospital.—Res. H.S. £130.
Burnley County Borough.—M.O.H. £1100.
Burnley, Victoria Hospital.—H.P. At rate of £150.
Bury Infirmary, Lancashire.—Third H.S. At rate of £150.
Cambridge, Addenbrooke's Hospital.—Res. Anæsthetist and Emergency Officer. At rate of £130.
Canterbury, Kent and Canterbury Hospital.—H.P. At rate of £125.
Cardiff Royal Infirmary.—Gynæcological H.S. At rate of £50.
Chester Royal Infirmary.—H.S. £150.
Chester, Wrenbury Hall Tuberculosis Training Colony.—Res. H.P. £250.
Connaught Hospital, Orford-road, E.—Res. H.S. At rate of £100. Also Hon. Visiting Dental Surgeon.
Croydon, Mayday Hospital.—Res. Asst. M.O. £300.
Doncaster Royal Infirmary.—Two Hon. Asst. Surgeons. Also Jun. H.S. At rate of £175.
Dublin, Mercers' Hospital.—Hon. Visiting Surgeon.
Dukinfield Borough and Hollingworth Urban District.—M.O.H. £800.
Evelina Hospital for Sick Children, Southwark, S.E.—H.S. At rate of £120.
French Hospital and Dispensary, 172, Shaftesbury-avenue, W.C.—Asst. Pathologist, part time. £100.
Gloucester, County and City Mental Hospitals.—Laboratory Asst. £260. Also Jun. Asst. M.O. £350.
Gloucester Royal Infirmary and Eye Institution.—Res. Surg. Officer. At rate of £175.
Great Yarmouth General Hospital.—Jun. H.S. At rate of £140.
Hospital for Sick Children, Great Ormond-street, W.C.—Dental Surgeon.
Ipswich, East Suffolk and Ipswich Hospital.—Cas. O. £150.
Liverpool, Royal Babies' Hospital, Woolton.—Res. M.O. At rate of £90.
Liverpool, Royal Children's Hospital, Myrtle-street.—Res. Cas. O. £250.
Llangwyfan, near Denbigh, North Wales Sanatorium.—Third Asst. Res. M.O. £250.
Madras Medical College.—Professor of Pathology. Rs.1100 a month.
Madras Presidency.—Asst. Director of P.H. for Maternity and Child Welfare. Rs.600 a month.
Maidstone, Kent County Ophthalmic and Aural Hospital.—H.S. to Ear, Nose, and Throat Department. At rate of £200.
Maidstone Pembrey Institution.—Asst. M.O. £200.
Macclesfield General Infirmary.—Second H.S. At rate of £150.
Manchester Hospital for Consumption and Diseases of the Throat and Chest.—Res. M.O. for In-patient Dept., Bowdon, Cheshire. £200.
Metropolitan Ear, Nose, and Throat Hospital, Fitzroy-square, W.—H.S. £150.
Newport Mental Hospital, Caerleon, Mon.—Asst. M.O. £400
Nottingham General Hospital.—Res. Cas. O. At rate of £150.
Oldham Royal Infirmary.—Two H.S.'s. Each at rate of £175.
Plymouth, City of.—Radium Officer. £1000.
Prince of Wales's General Hospital, London, N.—Hon. Asst. Surg.
Princess Louise Kensington Hospital for Children, St. Quintin-avenue, North Kensington, W.—Hon. Asst. Dental S.
Queen's Hospital for Children, Hackney-road, E.—Res. M.O. £200.
Reading, Blagrave Branch Hospital, Calcot.—H.S. At rate of £150.
Richmond, Surrey, Royal Hospital.—Sen. H.S. At rate of £150.
Royal Eye Hospital, St. George's Circus, Southwark, S.E.—H.S. and Asst. H.S. At rate of £150 and £100 respectively.
Royal Free Hospital and London (R.F.H.) School of Medicine for Women, W.C.—Obstet. and Gynæcological Unit, Sen. Asst., part time. £350. Second Asst. £500. Also Third Asst. £270.
Royal National Orthopædic Hospital, 234, Gt. Portland-street, W. Three Surg. Registrars. Each £105.
St. Benedict's Hospital, Church-lane, Tooting, S.W.—Asst. M.O. £350.
St. Mary's Hospital, W.—Med. Registrar. £200.
St. Pancras Dispensary, 39, Oakley-square, N.W.—Res. M.O. £200.
Samaritan Free Hospital for Women, Marylebone-road, N.W.—H.S. At rate of £100.
Sheffield Royal Hospital.—H.S. Also Ophth. H.S. Each at rate of £80.
Southampton, Free Eye Hospital.—Hon. Asst. Ophthal. Surgeon.
South-Eastern Hospital for Children, Sydenham, S.E.—Asst. Res. M.O. At rate of £100.
South London Hospital for Women, South Side, S.W.—Physician to the Skin Dept. Also Anæsthetist. 10*s.* 6*d.* per attendance.
Stockport Infirmary.—H.P. £175.
Swansea Hospital.—H.S. to Ear, Nose, Throat, &c. Depts. At rate of £200.
Walsall General Hospital.—Cas. H.S. At rate of £120.
Walsall, Manor Hospital.—First Asst. Res. M.O. At rate of £200.
Willesden General Hospital, N.W.—Clin. Asst. to Gynæcological Out-patients' Department.
Wolsingham, Holywood Hall Sanatorium.—Asst. M.O. £350.
Workmen's Compensation Act, 1925.—Member of the Medical Board for Silicosis. £750.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Dursley (Gloucestershire) and Ebbw Vale (Monmouthshire).

Births, Marriages, and Deaths

BIRTHS.

CRIPPS.—On Oct. 7th, at a nursing home, Horley, Surrey, the wife of W. Lawrence Cripps, F.R.C.S., of a daughter.

HARDING.—On Oct. 6th, at Lima House, Reading, to Dr. Elisabeth Harding, the wife of W. G. Harding, F.R.S.E.—a daughter.

JENNINGS.—On Oct. 8th, 1930, in London, to Edna (née Moynihan), wife of C. B. Jennings, L.M.S.S.A.—a daughter.

MARRIAGES.

BADO—REISS-SMITH.—On Oct. 9th, at St. Swithin's Church, Southsea, Major Arthur James Bado, Royal Army Medical Corps, to Thora Vivian Reiss-Smith, younger daughter of the late Robert E. and Mrs. Reiss-Smith, of Plymouth.

LODGE—LANKESTER.—On Sept. 20th, in Leicester, R. Lodge, M.B., F.R.C.S. Edin., of 13, De Montfort-street, Leicester, to Kathleen Mary Lankester, M.B., B.S. Lond., elder daughter of Mr. and Mrs. Allen Lankester, of Sandford, Knighton Grange-road, Leicester.

MCCOWAN—RODEN-BAKER.—On Oct. 13th, at Wesleyan Chapel, Wickhambreaux, Alexander Knight McCowan, M.B., Ch.B., to Florence Agnes Roden-Baker, Chartham, Kent.

MCELNEY—DEACON.—On Oct. 9th, at St. Andrew's Cathedral, Singapore, John Harold McElney, M.B., Ch.B. Edin., to Ariel Ransford Stewart Deacon, M.B., Ch.B. Liverp., D.T.M.

DEATHS.

BROWNE.—On Oct. 6th, at a nursing home, Colonel Andrew Lang Browne, late A.M.S., formerly of Kelvedon, Reading, and Taunton, Somerset, in his 82nd year.

BUSH.—On Oct. 7th, at Bristol, Col. James Paul Bush, C.M.G., C.B.E., Ch.M. Bristol, M.R.C.S. Eng., L.S.A., aged 73.

HUNTINGTON.—On Oct. 11th, at his daughter's residence, Hanover-street, Edinburgh, William Huntington, M.R.C.S. Eng., L.R.C.P. Lond., late of St. Andrews, Fife.

LEGG.—On Oct. 8th, suddenly, at Harley-street, W., Thomas Percy Legg, C.M.G., F.R.C.S., M.S.

WILLEY.—On Oct. 1st, 1930, at Farringford, Queen's Park W. Drive, Bournemouth, Thomas Willey, M.D., aged 84.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

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THE MANAGER.

NOTES, COMMENTS, AND ABSTRACTS

THE STETHOSCOPE: PAST AND PRESENT.

Presidential Address delivered before the Medical Society of London on Oct. 13th

BY R. A. YOUNG, M.D., B.Sc. LOND., F.R.C.P., F.S.A.,
SENIOR PHYSICIAN TO THE MIDDLESEX HOSPITAL; PHYSICIAN TO THE BROMPTON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST.

A GENERATION has arisen which has not been taught, or has forgotten, the full debt which the practice of medicine owes to Laennec. I have therefore taken the stethoscope as the symbol or sign of clinical medicine, not that I regard it as indispensable, but because I fear that the methodical study of symptoms and physical signs, including the use of the stethoscope, is being relegated to a subordinate position, while laboratory results are too often regarded as oracular and infallible, a claim which the laboratory worker is usually the last to make for them. [1]

The craftsman who works with an instrument, a tool, an apparatus, or a machine is usually at an advantage over one who does not. Any instrument used at its best gives its user the thrill of expertise, the joy of expression and that exaltation which elevate the craftsman into the artist. Prof. Sir Walter Raleigh [2] says: "It is the misfortune of the actor, the singer, and the dancer that their bodies are their sole instruments. . . . The poorest skill of the violinist may exercise itself upon a Stradivarius, but the actor is reduced to fiddle for the term of his natural life upon the face and fingers that he got from his mother."

Such was the fate of the physician till the invention of the stethoscope, the laryngoscope, the ophthalmoscope, and other apparatus for enlarging the fields of observation of his senses. I am convinced that the art and craft of surgery and its usefulness to suffering mankind have been greatly enhanced by the profound study which every successful surgeon gives to technique, to details which save time and labour, and to methods which obviate shock and minimise hæmorrhage, as well as to the devising of special apparatus to achieve these ends.

Criticisms of the Stethoscope.

Some mechanisms of simple type, such as the wheel, the pulley, the lever, and the crowbar seem so fundamental and so essential that it is difficult to conceive of civilised life without them. To such an order in medicine the stethoscope would seem to belong. The times are changing, and this instrument, long acclaimed as one of the greatest of medical inventions, is now, to judge by recent papers and correspondence in the medical journals, regarded as almost archaic survival, like the lancet, the stoury, and the wet-cupping apparatus, though the last-named seems to be achieving a new lease of life on the Continent.

Dr. Gravesen,[3] of Viljefiord, a sanatorium practitioner of great experience, writes: "We may derive help from recent gains in our knowledge which emphasise unequivocally the fact that the earliest beginnings of pulmonary tuberculosis are associated with insignificant and often quite negative stethoscopic signs . . . the stethoscopic examination even when it is carried out with all the finesse which, in the course of time has been devised for its rescue, is an exceedingly imperfect device, which must of necessity be supplemented by serial skiagrams if it is to be a guide to the detailed diagnosis."

Dr. Edward E. Prest [4] refers to "the lack of usefulness of the stethoscope in the diagnosing of pulmonary tuberculosis," but rightly stresses the importance of symptoms. It has even been suggested that in a disease like tuberculosis of the lungs the diagnosis and treatment can be effected and controlled by X ray methods entirely, apart from other physical methods.

Dr. W. Burton Wood [5] has recently written: "Yet the time has come when we must recognise that chest radiology has proved that much of the former teaching was wrong. The X ray tube is a more searching and a far more accurate instrument than Laennec's tube." He further states that: "Thus though we are not yet able to dispense with any diagnostic aids, though a careful clinical investigation must still be the prelude to any investigation, we can look forward with confidence to the day when instruments of precision will dispense with the need for tests largely dependent upon personal factors."

[The lecturer here briefly pointed out the value to clinical procedure of careful inspection, palpation, and percussion, and continued:—]

History of the Stethoscope.

The history of the introduction of the stethoscope as a clinical instrument is one of the most fascinating and stimulating stories in medicine, and is a striking record of the combination of genius and industry. Laennec first used the stethoscope in 1816. He read a paper on its use before the Academy of Sciences in February, 1818, gave lectures before the Academy of Medicine in May, June, and July of that year, and published the first edition of his immortal treatise in August, 1819. Sir William Hale-White,[6] to whose interesting book I am greatly indebted, tells me that the price of Laennec's book was 13 francs or 16 by post, and that of a stethoscope 3 francs.

It is interesting to note in this connexion that among Laennec's many hobbies was an interest in turning. This may account for the form of one of his early stethoscopes, of which the tube consisted of two parts screwed together, with a stopper in the chest end. Laennec's own description of his discovery and of its origin is given in his treatise, paragraph 8. Sir William Hale-White's translation of this dramatic yet artlessly described discovery runs:—

> "In 1816 I was consulted by a young woman presenting general symptoms of disease of the heart. Owing to her stoutness little information could be gathered by application of the hand and percussion. The patient's age and sex did not permit me to resort to the kind of examination I have just described—i.e., direct application of the ear to the chest. I recalled a well-known acoustic phenomenon—namely, if you place your ear against one end of a wooden beam the scratch of a pin at the other extremity is most distinctly audible. It occurred to me that this physical property might serve a useful purpose in the case with which I was then dealing. Taking a sheaf of paper I rolled it into a very tight roll, one end of which I placed over the præcordial region, whilst I put my ear to the other. I was both surprised and gratified at being able to hear the beating of the heart with much greater clearness and distinctness than I had ever done before by direct application of my ear."

Certain picturesque details have been added to this account by other writers. It is said that it was on the previous day at the Louvre that the idea was given to him by seeing children using a beam of wood in the manner described.

Dr. Warfield T. Longcope [7] has recently brought to light an interesting account, published by Dr. A. B. Granville [8] in 1854, in a book on Sudden Death. Dr. Granville consulted Laennec as a young man for certain alarming symptoms, apparently regarded as anginal. Laennec reassured him and Granville, impressed by his methods, followed his practice at the Necker Hospital. He gives the following detailed account of what he claims to have witnessed:—

> "At length hearing of the great and rising reputation of Dr. Laennec, in the treatment of diseases of the chest, at the Hôpital Necker, in which he had succeeded to the post

of principal physician, on the death of Mongenot, which had taken place in 1815, I obtained admission into that hospital, through the Minister of the Interior, as a student, and for a time followed the professor's practice, waiting to see how his diagnoses were verified by dissections, before I again submitted my own case to the consideration of another French physician.

"It was Laennec's habit, when examining a newly admitted patient, labouring under pectoral disorder, to percute him (as I have seen invariably done in the Clinique of La Charité also) in every part of the chest, both in front and at the back, as well as on either side. After which he would apply the ear to any part which had resounded badly or imperfectly. One day (it was the 13th of September, 1816, for I took note of it) Laennec seemed dissatisfied with the result of his percussion and direct auscultation in an interesting but obscure case before him; when turning around to the circle of pupils around the bed, 'Why,' said he, 'should we not avail ourselves of the help which acoustics yield to us, of making distant sounds more audible? The speaking-trumpet enables the dull of ear to hear the faintest whisper; the ascending tube in a warehouse conveys to the upper stories, in audible sounds, the muttered directions of the master below; the ticking of a watch, placed at the end of a long beam, is heard loudly by the ear applied to the other extremity; a tube, therefore, applied over the lungs or to the chest over the heart, ought to instruct us more plainly through our ears, with the movements and sounds going on within;' and forthwith snatching the *cahier des visites* from the hands of the nearest *élève interne*, and rolling it up lengthwise to the shape of a cylinder, having a perforation through its axis he applied it first to one side of the chest, then to the other, and again to the back, between and below the shoulder-blades, and declared (what we all know to be true) that he could make out with greater distinctness, than with the naked ear applied over the parts, their inward condition, from their respective sounds which he then described.

"Such was the birth of that famous instrument, at first denominated by its inventor *pectoriloque*, which, slowly winning its way from the humble hospital, bearing the name of its founder, the unlucky minister of Louis XVI. to every corner of Europe and to the new world, has laid open to the medical men in almost every instance the scenes of disease enacted within the thorax, which before baffled detection. The invention of the stethoscope, simple and accidental as it may have been, marks a striking era in the history of medicine, and is second only in importance of results to the discovery made by the immortal Harvey.

"On the following day Laennec had procured proper cylinders made of a thick pasteboard (for which he not long after substituted hard wood), 8 in. long, and 1¼ in. in diameter, perfectly smooth, with an even perforation in its centre throughout its axis. It had the two ends somewhat hollowed out, so that the one which was applied to the convex parts of the chest, as well as the opposite end to which the ear of the examiner was applied, fitted admirably for both purposes. Such an instrument as this I brought to England in November, 1817 (that is, a year after its invention), when I first settled myself down in practice in Savile Row; and I well remember how most of my contemporaries, to whom the instrument was exhibited and explained, made themselves merry at the credulity of French doctors and my own."

Dr. Granville adds a footnote with an almost injured tone:—

"Why Laennec, in his first edition of the work in which he announced the invention should have changed the scene of its first application from the ward of the hospital to the chamber of a fair patient, is not very intelligible to me, except on the score of French *gallanterie*. My own notes, taken down at the time and on the spot, are liable to no misconception."

There does not seem to be any real discrepancy. Laennec, flushed with the joy of his discovery of a day or so before, may well have adopted the dramatic method of announcing his discovery to his pupils. I prefer this explanation to that of Dr. Longcope, who writes: "It seems probable, therefore, that his description of the use of the stethoscope by Laennec at the Hôpital Necker is accurate, though the conclusion that he witnessed the invention of the instrument may be an indulgence to his childish (Granville's) vanity." In any case, we know that Dr. Granville was a distinguished and learned man, who kept a diary. The date and the description he gives are consequently of great interest.

Fortunately we can form a very clear impression of Laennec, for not only are there portraits and sketches of him, one of the latter drawn and lithographed by himself, but there are also many descriptions of his appearance and of his personality, written by his enthusiastic pupils and admirers, not a few of them by our own countrymen, who early recognised the importance of his work. Among these may be mentioned Stokes, Hodgkin, C. J. B. Williams, and Gregory, the son of the professor at Edinburgh. Williams [9] made a sketch of him and writes of him as "of fine sharp intelligent features and amiable expression of countenance; and with his extraordinary costume of straight-cut grey frieze coat and embroidered decoration." Laennec was described by Dr. S. G. Goodrich [10] (Peter Parley) as follows: "He was a little man, five feet three inches in height, and thin as a shadow. However, he has acute features and a manner which bespeaks energy and consciousness of power." I must also quote Sir William Hale-White's clear-cut verbal picture, drawn from contemporary sources: "This small, attenuated bony figure of a man with prominent cheek bones, hollow cheeks, thin nose and lips, calm, reflective blue-grey eyes, a long head covered with carelessly combed abundant chestnut hair, who was not handsome, but not ugly, whose face showed much distinction and intelligence." Rudyard Kipling,[11] in his story of "Marklake Witches" in "Rewards and Fairies," gives a sensitive and understanding picture of Laennec. The incident is, however, entirely imaginary, as Laennec never visited England and was certainly not a prisoner of war in this country.

Auscultation before Laennec: Laennec's Personality.

In reference to what was known of sounds associated with normal or abnormal bodily conditions before Laennec's time, the Hippocratic school knew of succussion and the sound of pleural friction, the latter being described as "like the grating or creaking of a leather thong." Araeteus is said to have practised a form of auscultation. Dr. Samuel Gee [12] states that metallic tinkle was described by Willis in 1674, and crepitation in pneumonia by Van Swieten in 1745. Harvey mentions the heart sounds in his "De motu cordis," and a cardiac murmur was described by James Douglas in 1715. Perhaps, however, the most striking observations were those of that great genius Robert Hooke, who wrote: "I have been able to hear very plainly the beating of a man's heart; and it is common to hear the motion of the wind to and from the guts and other small vessels; the stopping in the lungs is early discovered by the wheezing; the stopping of the head by the humming and whistling noises, the slipping to and fro of the joints in many cases by crackling and the like."

In the three years or less between the first use of his stethoscope and the publication of the first edition of his book, Laennec accomplished an almost incredible amount of work, describing the sounds heard in the lungs in normal and abnormal conditions, so completely and so accurately that little has been added since and still less been modified. Not only so, but he established and verified the significance of the sounds heard by most careful study in the post mortem room. By these means he established the nature of phthisis as tuberculous, and greatly increased our knowledge of other diseases of the lungs, including pulmonary œdema, gangrene, emphysema, bronchiectasis, hydrothorax, and pneumothorax, some of which he actually first recognised. A mere enumeration of some of the terms introduced into medicine by Laennec will serve to show his great industry. They include: auscultation, stethoscope, râles, fremitus (fremissement), cracked pot sound, metallic tinkling (tintement metallique), bronchophony, ægophony, cavernous breathing, puerile breathing, vocal resonance, veiled puff, and bruit. He also recognised the bell sound, afterwards called the *bruit d'airain* by Trousseau.

His work on the heart sounds was noteworthy, though less exhaustive and less completely accurate. He recognised murmurs and described a *bruit de râpe*

and a *bruit de soufflet*, both of these terms being admirably descriptive.

It is not surprising after this great achievement that his health broke down, and that he had to go to his native Brittany in 1819 to recuperate after the completion of his book, but before its publication. He soon recovered and returned to work, to break down again more seriously next year, no doubt from the effects of pulmonary tuberculosis. He returned to his beloved Brittany, this time for a stay of two years, during which he indulged in his favourite outdoor pastimes. He desired to excel in shooting, hunting, and riding, and was modest about his great scientific achievements. He played the flute, and worked at turning with his lathe. He then returned to Paris in 1821, to work harder than ever. Pariset writes: "He was but a breath of air and thought himself a Hercules." In addition to his practice, which became large, and to his official duties, he extended his researches and re-wrote and altered his book. This was completed just as he left Paris. At this time he recognised that he was dying, and he knew the nature of his own complaint. His urgent desire was to return to Brittany. He left Paris on May 30th, 1826, reached his home at Kelouarnec (The Place of the Foxes) after a tedious and uncomfortable journey, involving much suffering. He died on August 13th of the same year, at the early age of forty-five and a half years.

More Criticism: the Stethoscope in Popular Literature.

It was natural that so new and revolutionary a discovery should excite opposition, which often took the form of ridicule. His chief opponent in France was the self-opinionated and pugnacious F. J. V. Broussais. Of Dr. H. J. Cholmely it is recorded in a history of Guy's Hospital[13]: "Like most of his contemporaries, he despised the stethoscope and would have nothing to do with the new-fangled innovation. Surprise, therefore, was in everyone's countenance when he one day came into the hospital flourishing a stethoscope; he said he had bought one of the fashionable instruments, and proceeding to the ward placed it on the table, at the same time inserting a flower into the top of it, and exclaiming, 'What a capital bouquet holder.' On leaving, he took it up and repeated the process in the next ward." The *Observer* recently quoted[14] from its old files of April, 1830, a jibe at the stethoscope. Referring to metallic tinkle, the most likely source of this sign was described as from "two pieces of coin which found their way into the palm of the doctor." Oliver Wendell Holmes made gentle fun in his doggerel, "Stethoscope Song." You may remember that two flies get entangled in a spider's web within the stethoscope. I may quote a few lines:—

> "Now when the stethoscope came out
> The flies began to buzz and whiz.
> Oh ho! the matter is clear no doubt,
> An aneurysm there plainly is
> The bruit de râpe and the bruit de scie,
> And the bruit de diable are all combined."

The kind young doctor listens to six young damsels tight and frail—

> "So fast their little hearts did bound,
> The frightened insects buzzed the more,
> So over their chests he found
> The râle sifflant and the râle sonore."

An incident recorded by C. J. B. Williams perhaps best illustrates the way in which the stethoscope was at first regarded. He was appointed travelling physician to a gentleman. At the consultation at which he was introduced, he deprecatingly asked the physician in charge if the chest of the patient had been examined with the stethoscope. The reply was in the negative, "with as much contempt of manner as politeness would allow." Most of us are probably familiar with that type of man, and can recognise that manner, so devastating in its assumed contemptuous superiority.

The Introduction of the Stethoscope and its Modification.

The value of the stethoscope achieved early recognition in this country, and there can be little doubt that this fact was appreciated by Laennec, for he seems to have welcomed his English pupils and to have had a real affection for some of them. His book was translated into English by Sir John Forbes[15] in 1821. Sir Charles Scudamore wrote of Laennec's method in 1826. C. J. B. Williams, an enthusiastic admirer of Laennec, wrote and lectured about his work and helped to popularise the stethoscope. The Dublin school, with its brilliant group of Stokes, Graves, and Corrigan, adopted and extended Laennec's work. Stokes[16] published an "Introduction to the use of the Stethoscope" in 1825. It is charmingly written and is a notable contribution to the subject. The stethoscope was at that time more generally employed in this country than in that of its origin, and this seems to be equally true to-day.

There is some competition for the honour of the first introduction of the stethoscope into this country. Sir Benjamin Ward Richardson,[17] who devoted much attention to the stethoscope and its history, at first accorded the credit to Dr. Granville, F.R.S., to whom I have already referred. He was editor of the *London Medical and Physical Journal*, in which a description of the stethoscope appears in the issue of Jan. 25th, 1820. The late Sir F. Seymour Haden, the surgeon and master etcher, claimed priority for his father, Dr. C. T. Haden, of Derby. He stated that Dr. Haden, who died at the early age of 38, "was an early believer in the discoveries of Laennec, and worked with him at the lathe at which he made his first instruments for auscultation." No dates were given, so it is difficult to decide between these rival claims.

The primitive stethoscope was, as we all know, a roll of paper. The next form was probably the simple straight tube, with a central bore and a funnel-shaped stopper at the chest end, of which I am fortunate enough to possess a specimen. It is 27 cm. long, 4 cm. in diameter, and has a bore of 1 cm. Such are called the first edition stethoscopes or sometimes the *bâton de maréchale*. Laennec at first called his instrument the bâton, cylinder, or pectoriloque, and eventually gave it the euphonious name of stethoscope. The next form seems to have been divided into two parts in the middle, fitting into one another or screwed together. I have here a specimen kindly lent me by Dr. Michael Foster. Other modifications soon occurred. One of the earliest was the hollowing out of the end applied to the ear. C. J. B. Williams tells the story of Sir Charles Scudamore, who when visiting Laennec was unable to hear with the stethoscope owing to the large size of his tragus, but appreciated its value when the aural end was hollowed out. It soon took the abbreviated or third edition form, of which I have here two examples. They were shorter, but still 2½–3 cm. thick, but with a stopper at the chest end and a definite ear piece. This was probably the form in which it was first available in this country, apart from a few actually presented by Laennec to his pupils. Sir B. W. Richardson says it was imported from Paris in 1820 by Trentell and Wurtz, booksellers at Soho-square, at a price of 2 francs, which is less than the price originally charged in Paris. He adds that when the supply was not equal to the demand, the instruments were made by a wood-turner named Allnutt, who lived in Piccadilly. Piorry[18] made the great change of reducing the stem of the instrument to the size of the little finger, thus giving the wooden stethoscope an approximation to its present form. His book with a plate showing its form and his pleximeter was published in 1828. The next advance was the flexible stethoscope. There seems little doubt that the credit for this must be accorded to Dr. N. P. Comins,[19] who described in 1828–29 a flexible stethoscope as a substitute for what he calls the "timber cylinder." He also suggests that it can be made so that both

ears can be used, which must be the first suggestion of a binaural stethoscope. He claimed that "as it does not require the head of the stethoscopist to be over the chest of the sick person, and as another tube can be screwed to the instrument so as to lengthen it, it can be used in the highest ranks of society without offending fastidious delicacy." He also mentions that it can be lengthened to avoid too close proximity to contagious cases and the miserably wretched. In this connexion I may mention that Dr. Graham Steell, at Manchester, used a very long wooden stethoscope, as also did Murchison. It is presumed that the length was based upon the jumping records of the flea. Dr. Golding-Bird,[20] at Guy's Hospital, also employed a monaural flexible stethoscope.

There are many names put forward as the inventors of the binaural stethoscope. American writers [21] claim this distinction for Dr. Cammann, but it is clear from what I have already quoted that Comins in 1828 had already had the idea, if he had not actually put it into practice. C. J. B. Williams described a binaural stethoscope, consisting of two metal tubes attached to the bell of an ordinary stethoscope and with flat ear pieces. Dr. Leared showed an improved form at the International Exhibition of 1851, with tubes of gutta-percha attached to the chest piece at one end, and to the ear pieces at the other. I believe this to be the real precursor of the present form. Dr. N. B. Marsh, of Cincinnatti, described a binaural stethoscope in the same year. I cannot trace Dr. Cammann's stethoscope earlier than 1851. It does, however, appear to have been the first stethoscope of the modern form, with metal tubes, spring, rubber tubes, and chest piece.

It is a curious feature of the medical mind that much energy and ingenuity are often expended in devising or in modifying instruments. Both forms of stethoscope amply illustrate this. The rigid stethoscope was made of various shapes, in various sections, and of many different materials. Various woods were tried, deal being a favourite. My own is made of guaiacum wood, which seems appropriate. Ebonite, papier-maché, metal, and even glass have been employed. The ear piece has been made to unscrew or to fold. Forms designed to fit into the hat, needless to say the tall hat, or to fold to suit the pocket have been described. The straight stem [22] has been graduated in centimetres to measure Kronig's area or the position of the cardiac impulse. The ear piece has been grooved and rubber-shod to serve as a plessor or as a knee-jerk hammer. A vacuum stethoscope was described of hollow glass with a vacuum. Piorry described a stethoscope with a hammer to facilitate auscultatory percussion. I have even seen a wooden stethoscope with a second tube attached to the chest piece and a rubber tube going to a single ear piece, making it a hybrid binaural. Perhaps the most bizarre ingenuity was shown in the stethoscope suggested by Sir B. W. Richardson.[23] The ear piece was made to fold, and was of silvered glass to serve as a reflecting mirror; the chest piece had a detachable piece shaped to constitute an ear speculum when required. It is perhaps not surprising that he found it did not come up to his expectations, and that it was liable to break in the pocket. An inverted wine glass has been used as an emergency stethoscope, and I have found a thermos flask quite efficient.

The binaural stethoscope has given even greater scope for ingenious modification. The metal tubes carrying the ear pieces have shown the least variation, but they have been variously carved and jointed. I think the credit of the spring between the two tubes must be given to Cammann, who described the stethoscope as "self adjusting." The form of spring has varied from a rubber band to an actual coiled spring joining the two metal ear tubes. In one form the spring bears the ear pieces and is carved to go behind the head, leaving the field of vision unimpeded. Curiously enough, the only reference our registrar, Mr. Haines Carter, can find to the stethoscope as an instrument in our own Transactions is the description by Dr. G. A. Herschell [24] in 1891 of a lever clamp to fix the two ear tubes when the ear pieces are comfortably at place in the ears, a form which is still in common use.

It is in regard to the chest pieces that the greatest variety occurs. The bell or trumpet form is the commonest, with or without a finger rest attachment. The phonendoscope of Bazzi and Bianchi applied a new principle, and gave a louder quality to the sounds heard. Other forms of diaphragm or disc stethoscope chest piece are the Bowles and the Minchin, both of which are popular at the present time. A revolving chest piece [25] is capable of use as a membrane or phonendoscope type, and then, on turning, as a simple open bell end. A form for the partially deaf has been devised. Teske's stethonoscope is a special form designed to give louder conduction, and is also adaptable as a simple bell end. S. Scott Alison [26] described a "hydrophone," which was a rubber bag the size and shape of a large watch. This was filled with water and interposed between the chest piece and the chest wall. It was said to augment the sounds heard. The same physician introduced the first of the so-called differential stethoscopes. This was a form in which each ear listened through to the sound from a separate chest piece. A more recent form employing two Bowles's chest pieces, has been described by N. Boston.[27] There is fitted in the conducting tube a two- or three-way valve, so that the two areas auscultated can be listened to simultaneously or successively. More complex forms of differential stethoscope were the Bock and the Oertel.[28] It was claimed that by their agency in comparing quantitatively the first sound at the apex with the second sound at the base information as to the efficiency of the myocardium could be obtained.

The most complex forms of stethoscope have been those described by F. D. Parker,[29] one of which he called the refractoscope, the other the partial stethoscope. By their aid he analysed the third heart sound, and he describes a fresh auscultatory sign, the "outflow sound." The first attempt I can trace to produce multiple stethoscopes enabling many people to listen at the same time is that of Landouzy in 1850.[30] An interesting account of the more recent attempts in this direction, including the multiple electrical stethoscope, its uses and limitations, has been given by Dr. Jenner Hoskin.[31] The magnoscope, an electrical stethoscope with a three-stage triode amplifier, has been described and used by Akiro Sato and H. Nukiyama.[32]

Stethoscopy since the time of Laennec.

Laennec's work was so complete that but little modification and extension of his observations with the stethoscope in regard to the lungs have been made. His cousin, Meriadec Laennec, introduced the term vesicular breathing for the normal respiratory sounds. Andral employed the term bronchial respiration, which was previously called tracheal breathing. The significance of pleural friction, which was wrongly interpreted by Laennec, was established by Reynaud in 1829.[33] Laennec used the words tubular and amphoric, but not in respect of the forms of breath sound now so called. Skoda [34] confirmed and extended Laennec's observations, as did also Stokes, Graves, and Corrigan. Skoda gave the present interpretation to the sound called the veiled puff, mentioned by Laennec, but not clearly defined. Baccelli in 1877 first introduced the investigation of the whispered voice.

In regard to the heart sounds, both normal and abnormal, Laennec's work in this respect has had to be corrected and extended. Time will not permit to refer to more than a few of the subsequent discoveries. Laennec heard pericardial friction, but interpreted it wrongly. Its true significance was established in 1824 by V. Collin,[35] who was Laennec's

chef de clinique. Diastolic murmurs were recognised by Bouillaud in 1841. Dr. F. I. Mayor, in 1818, noted the fœtal heart sounds, and used them as a test of pregnancy and to establish the life of the fœtus. J. A. le Jumeau, Vicomte de Kergaradec, rediscovered these in 1822, and first described the uterine souffle.

The stethoscope has also been applied to the sounds produced in the œsophagus, the stomach, and intestines. The sounds heard in joints and in fascial planes must also be recognised. Outside of medicine it is sometimes used in the discovery of leaks in the domestic water-supply.

It is a significant fact that all the more complex forms of stethoscope have had a mere ephemeral vogue. The instrument is admirable for its original purpose—to aid the sense of hearing, especially in convenience and comfort of application, and to assist in the localisation of normal or abnormal sounds. Any attempts to make it subserve other purposes, however ingenious, have been at best partially successful, and have for the most part failed. The real reason for this is that experience in the recognition of the normal and the abnormal is the real necessity in the use of the stethoscope, and this experience must involve doing as Laennec did, determining by combined clinical and pathological study just what the abnormal sounds mean. By this means only can we learn to observe in physical signs and to think in lesions, and no instrumental refinements can lessen or shorten the labour necessary to acquire this experience. There are fashions in stethoscopes as in dress. The tendency of the practitioner has always been to adopt the simplest and most convenient forms, and especially those that give the best conduction and the least distortion of the sounds. I have for years preferred the form with the simple hinged spring, which folds. As far as I can see, the most popular chest pieces at the present time are the ordinary bell or trumpet end, particularly the Starling form, and the flat type with a metal-receiving diaphragm, especially the Bowles and the Minchin. I still prefer the bell form, and preferably one with a wooden or ivory end rather than one of metal, since it is warmer and less uncomfortable for the patient. For a time there was a vogue for covering the chest piece with a small perforated rubber cap, or with a piece of a large drainage-tube. This was supposed to produce better apposition, less discomfort to the patient, and less extraneous sounds from hairs or other factors. The flat forms are undoubtedly useful for examination of the back in patients very ill, and for the auscultatory method of determining blood pressure.

The Present Status of Bedside Methods.

The past of the stethoscope is clearly a great and glorious one. Largely owing to the genius of Laennec it served to introduce a new and fruitful method to medicine, and to inaugurate an era of great clinical advance. The time has come to ask: What of the present? Examiners in medicine and clinical teachers generally agree that the student of to-day knows a less extensive and less accurate knowledge of physical signs, more especially the stethoscopic signs, than his predecessors acquired while at hospital. Let me hasten to add that, in my opinion, this is not the fault of the student, nor is it entirely due to neglect on the part of the teachers. Special hospitals for diseases of the chest and heart, and the increasing control of the health authorities over tuberculous disease, are starving our wards of the cases upon which we can best teach and learn the use of the stethoscope. I have found the student very desirous of learning the nomenclature and the significance of stethoscopic physical signs. Another cause of the relative neglect of physical signs is that we are becoming too specialised and departmental in our medical schools. New methods have arisen to aid us in our diagnosis, notably radiology and laboratory methods, physical, chemical, and microscopical. They are giving us priceless aid, and I believe they are going to give us even greater help, but their findings should be considered only after a full clinical study. They should supplement and not supplant clinical investigation.

I would stress the importance of the taking of careful histories. Laennec, when he went to Paris, spent his first three years in taking careful clinical histories of 400 cases. His cousin, Meriadec Laennec, tells us that it was on this groundwork that all his researches and discoveries were based. Let Laennec tell us his method in his own words:—

> "When a patient enters the hospital it is the duty of the pupil to collect from him those facts which he can give concerning his disease and to follow their course.
>
> "On examining the patient myself, I dictate the principal symptoms which I observe, those especially which may serve to establish the diagnosis or indications for treatment. And I confirm my conclusion unless I may have to change it, by subsequent observation. This dictation, which is made in Latin, for the reasons easily appreciated, is taken down by the pupil in charge of the patient, and at the same time on a separate sheet, which I call the 'diagnostic leaf,' to keep which in order that it may be shown to me, is the especial duty of another pupil. If a new sign appear, such as might modify the first diagnosis, I have that also added.
>
> "If the patient die, the account of the autopsy is collected by the pupil in charge of the case. I read this account before all those who have been present at the autopsy, and if any correction is to be made, make it on the spot."

What I most admire in this description are the calm, open-mindedness, and the clear perspective of Laennec, and it seems to me that these two attitudes of mind must be cultivated by both laboratory workers and clinicians.

The Clinician and the Laboratory Worker.

I have not been bold enough to attempt to forecast the future of the stethoscope. My reading has shown me that the medical prophet is too often a false prophet. He fails alike in prognosis and in prognostication. I do, however, feel that the stethoscope should have our veneration for what it has revealed in the past, and our respect for what it does in the present. The laboratories and the X rays are yielding us valuable help in matters where the stethoscope can only give us indications or inconclusive information.

[The lecturer here pointed out that the tendency to restrict the term "research" to work in laboratories was unfortunate, and continued:—]

What we clinicians ask of the laboratory workers are: (1) Means for assessment of function, and particularly of the minimum organic function consistent with active life. (2) Means for determining the extent and nature of disease processes. (3) A measure of activity in disease processes produced by infective agencies.

What we all need is closer coöperation and a more understanding appreciation of each other's difficulties, as well as a more frank criticism of each other's work. It is because I believe that this ancient but ever youthful society affords the place and the means to achieve these objects that I have ventured to address you on the means of clinical investigation.

My concluding remarks, which if I had followed precedent should have been my first, are to try to express, however inadequately, my appreciation of the honour you have conferred upon me in electing me as your President. It would be difficult for me to put in words the feelings of pride and gratification I experienced when my predecessor in this honoured chair told me of my nomination in that kindly, hearty, and generous manner so characteristic of him.

I have delayed this expression to the end deliberately, because I feel that the genius of this society is in the spirit of the views expressed in this address. The Fellows of this Society represent widely different interests, but we meet here in a friendly spirit to compare notes and to learn from one another. This Society liberally rewards those who work for it and those who attend its meetings, as I have the best of reasons for knowing. The greatest of its gifts is, however, the friendship of its Fellows, to which alone

I owe my position in this chair, and for which I thank you all most heartily.

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SEX EDUCATION FOR CHILDREN.

A SERIES of leaflets has recently been published by the Association of Infant Welfare and Maternity Centres, in which is given information on the subject of sex suitable for children of varying ages. The first leaflet of the series is addressed to parents, and puts their responsibilities in a clear light; the leaflet for young children is simple and yet adequate for its purpose. Two separate leaflets for boys and girls at the age of puberty gives some explanation of the development through which they are passing and a few rules of hygiene. For older boys and girls a leaflet on the meaning of love puts the subject of sex relationships in a sensible and healthy light. In every leaflet the information is given with delicacy, but without mystery or embarrassment. The series should be a useful guide to parents who have been puzzled by this problem.

VOICE AND THE VOCAL APPARATUS.

A LITTLE brochure [1] by Mr. W. B. Crow, D.Sc., Head of the Department of Biology at the Huddersfield Technical College, provides a pleasant and rambling discourse on the voice of man and animals, with something about the mechanism of its production and something about the theory of its evolution. The author mentions, but does not explain, the vocal registers, and does not attempt to describe the mode of action of the vocal cords in the production of sound; but he discusses, though briefly, a number of interesting things, such as the relationship of voice to sex, and the phylogeny of voice. The vocal habits of various animals are mentioned. Dr. Crow's suggestion that an owl hoots to scare away intruders is unconvincing; with its keen hearing and silent flight, it is probable that the owl uses the sudden sound to frighten its prey into betraying its position. This essay may stimulate the reader to further examination of many interesting questions.

[1] Cambridge: W. Heffer and Sons. 1930. Pp. 29. 1s.

MALTA AS A WINTER HEALTH RESORT.

Dr. E. F. N. Currey writes: "I would like to bring forward the claims of Malta as a winter health resort. The winter season commences on Oct. 1st and continues till the end of April. The climate is mild, dry, and warm, with the maximum of sunshine. Invalids and elderly persons can take open-air exercise, or sit out of doors nearly every day of the year. There is a very fine sea front at Sheiva, the residential quarter, where one can stroll in the sun.

The average daily sunshine: October, 5·9 hours; November, 5·9 hours; December, 5·4 hours; January, 5 hours; February, 6 hours; March, 7·2 hours; April, 8·2 hours. Minimum winter temperature, about 55°. Minimum temperature for the year, 66°.

The climate is suitable for anyone who fears the cold and damp of the winter at home, or elderly persons, or anyone suffering from such diseases as chronic bronchitis, renal, or cardiac trouble. Asthma is frequently greatly benefited. It is not suitable for anyone suffering from pulmonary tuberculosis. There are quite comfortable hotels, at reasonable pension terms. Villas can be rented. There are plenty of amusements and excellent clubs."

THE LATE DR. R. W. MacKENNA.

S. A. K. W. writes: "In your appreciative obituary notice of the late Dr. R. W. MacKenna there is no reference to the lighter side of his literary labours. Surely old Edinburgh men have not forgotten the delight with which they welcomed in the pages of the *Student* the ditties subsequently collected into a rare volume entitled 'Carmina Cadaveris.' One of these depicted the worries of the examinee who, confused and tormented, in his dreams

> '. . . rides the cardiac cycle round,
> The crossed pyramidal tract.'

Couched in a macabre style was the tale of a 'stiff.'

> 'Working man,
> Called Dan.
> Saturday,
> Gets his pay.
> Public-house;
> Big carouse.
> Knocked about;
> Chucked out.
> Fall on head.
> Daniel dead.'

And so on till:—

> 'Fragrant whiff;
> Fresh 'stiff.'
> Students view;
> Subject new.'

With touches such as these did MacKenna add to the gaiety of irresponsible youth."

QUEEN'S HOSPITAL FOR CHILDREN.—This hospital, in Hackney-road, E., has been presented by Sir James Carmichael with an annexe to its Little Folks' Home at Bexhill. The new building, which has cost £4000, contains two open-air wards, giving room for ten beds, and six bedrooms for nurses and servants who have hitherto been badly housed. The capacity of the home has thus been increased to 46, and that of the entire institution to 180 beds.

WORK AT ROEHAMPTON HOSPITAL.—A report upon the 15 years' work of Queen Mary's (Roehampton) Hospital states that of the 41,000 officers and men who lost limbs in the war 24,339 have been treated there for the supply of their first limb, and in many cases their second. Since the institution was reconstructed and extended in 1925 it has been fully occupied, and during the past year further accommodation has been added to provide for the treatment of facial injury, diabetic cases, and other classes of patients transferred from the Queen's Hospital, Sidcup, now closed. Arrangements have been made for the accommodation of a limited number of amputation cases among civilians, primarily railwaymen and miners. The old buildings used for the making of artificial limbs have been replaced by a permanent brick building in order that the work may be carried on more efficiently.

ADDRESSES AND ORIGINAL ARTICLES

THE BIRTH OF CHEMICAL BIOLOGY.

The Harveian Oration delivered before the Royal College of Physicians of London on Oct. 18th, 1930,

By J. B. LEATHES, M.B. OXF., F.R.S.,

FELLOW OF THE COLLEGE; PROFESSOR OF PHYSIOLOGY IN THE UNIVERSITY OF SHEFFIELD.

WE meet here on St. Luke's day to honour the wish of William Harvey, and carry out the terms of the deed of gift which he assigned to the College in 1656. Harvey's wish, you remember, was that there should be once every year "a commemoration of all the benefactors of the College," and that this commemoration should keep alive in us the desire "to imitate these benefactors, to contribute our endeavours for the advancement of the Society according to their example, and to search and study out the secrets of Nature by way of experiment."

In any such commemoration we cannot but remember the many ways in which Harvey himself was a benefactor of the College. For 50 years a Fellow, he served as treasurer for many, down to 1629; for 40 years he was Lumleian lecturer in anatomy and surgery, to which post he was appointed in 1615; at his own cost he built for the College "a great parlour or convocation house for the Fellows to meet in," with a library and museum above it, which was opened in 1653 with a ceremony sumptuously provided by himself. This hall was built apparently over the court or garden of the premises at Amen Corner, which recently, by the generosity of Dr. Hamey, had been bought for the College. Here, in the year before Harvey's gift, the College had set up his statue.

When Harvey first became a Fellow in 1607 the College meetings were still held at Linacre's house in Knightrider-street, as they had been since 1518. But in 1614 the rooms at Amen Corner were rented from the Chapter of St. Paul's, and 35 years later Dr. Hamey relieved the College of the burden of the annual rent by his purchase and gift. Harvey's hall and library were furnished by him, and equipped with books and with instruments at the time, and in his will he left "to the College of Physicians all my bookes and papers and my best Persia long Carpet and my blue sattin imbroyedyed Cushion, one paire of brasse Andirons with fire shovell and tongues of brasse for the ornament of the meeting rooms I have erected for that purpose." But buildings and contents, and the statue of Harvey as well, were destroyed a few years later on the fourth day of the great Fire. After that the new College buildings in Warwick-lane, built by Wren and Robert Hooke, were not opened till 1674. These buildings served the College for 150 years down to 1825, when the rooms in which we are met came to be, as they have now been for three generations, identified with the College.

In more than 400 years there have been but four buildings that have been the College of Physicians. If and when in the fifth century of the life of the College there is to be a fifth, the benefactions of Hamey and of Harvey for the second cannot be forgotten.

But it is not only benefactions such as these that we are bidden to commemorate. Our commemoration is to be of those who have built for all time, "who have sought and studied out the secrets of Nature by way of experiment" and thereby made this College, if they were members, a house of Fame, and, if not, none the less have deserved well of it. Even in a legal document for the transfer of an estate this single-minded benefactor could not fail to make clear what in his opinion was the highest claim to commemoration, as his whole life had shown, "the inquiry of truth which," in the words of his contemporary, "is the lovemaking and the wooing of it."

Harvey's Later Years.

Harvey was 50 when he published the "de Motu Cordis et Sanguinis," and had already been attached to the Court as physician extraordinary to the King for ten years. Four years later he became physician-in-ordinary to Charles I. Notwithstanding his duties at Court, and his practice both at St. Bartholomew's and among his private patients, and in spite of the political troubles of the times, he continued to make opportunities for pursuing his search into the secrets of nature, amassing materials for the remarkable work which he was at last persuaded to publish in 1651 when he was 73 years old, the "de Generatione Animalium." "During a long series of years," he tells us there, "for three months in the autumn and winter almost every day I had the opportunity of dissecting numbers of hinds and does" in the royal parks and forests for the study of this subject, not only hunted animals, but also animals set apart for his special use. Week by week the changes are recorded from September on to the end of December. And though perhaps less systematically countless dissections of other viviparous animals during pregnancy he carried out as well. This was in the years before the war, the year 1633 he specially notes as an exceptionally early rutting season.

In 1642, after the battle of Edgehill, he was in Oxford, apparently till its fall in '46. Of that time Aubrey says: "I remember he came several times to our College (Trinity) to George Bathurst, B.D., who had a hen to hatch eggs in his chamber, which they opened daily to see the way of generation." When Oxford fell he gave up the Wardenship of Merton, to which he had been appointed in the previous year, and returned to London or its neighbourhood. There we know he found that much of his most valued material, on the generation of insects, "the fruits of many years' toil, had not only with the permission but by command of Parliament been abstracted by my enemies from my museum," when his house at the same time was stripped of all its furniture. These notes, that perished also, must have been collected during the busiest years of his life before the war.

He was now 68, and from this time he lived with his brothers either in London or in its neighbourhood, "finding solace in my studies and a balm for my spirit in the memory of my observations of former years." The "de Generatione" is therefore remarkable if only as witness to the single-minded constancy of a busy man "wooing and making love to truth" through half a lifetime. That it profoundly influenced the growth of knowledge as did the "Opusculum Aureum" of 1628 cannot be maintained. That it is free from "that philosophy of discourse and disputation into which we are betrayed by the forces of our own minds" is too much to say. What work of those days was if we except the "de Motu Cordis"? But it contains a mass of observation the result of

sustained thought, unwearying anatomical studies, and, as has been so well put before us in recent years by Dr. Herbert Spencer, his watchful attention to a wide clinical experience. Naked-eye anatomy could do no more. It is easy to reflect that it was already possible for the anatomist not to confine himself to naked-eye observations. Harvey used a lens, but the compound microscope had been constructed a good many years before this book appeared. Had the distractions of the times been less cruel it would hardly have been left for Malpighi, 50 years younger than Harvey, to reap the first harvest of microscopic anatomy in the years immediately following Harvey's death. Swammerdam indeed made the first observation of blood corpuscles within a year, and the histological publications of Malpighi began with the "de Pulmonibus" three years later. But the microscope has not even now solved the riddles of generation; we can indeed say pretty confidently that it will not. Such was the quest on which Harvey was concentrated for 30 years.

The Physiology of Respiration.

In the seventeenth century modern physiology was born; its birth was attended by two miracles. The first was the miracle of 1628, when Harvey bade medicine take up its bed and walk, and the delusions of 1400 years' enslavement to authority and tradition were swept away by the evidence of independent observation and experiment, one of the most remarkable chapters in the history of human thought. The other was the miraculous birth of the physiology of respiration ten years after Harvey's death.

There are passages in the "de Generatione" and the tract on "Parturition" which suggest that Harvey was struggling to emancipate himself from the current doctrines of the functions of the lungs and blood. "Whether the object of respiration is really to cool the animal shall be discussed elsewhere at greater length"; and after giving good reasons for a different account he says:—

"If anyone will carefully attend to these circumstances and consider a little more closely the nature of air, he will allow, I think, that air is given neither for the cooling nor the nutrition of animals. It is as if heat were rather enkindled within the fœtus than repressed by the influence of air. Thus, much by the way on the subject of respiration; hereafter perhaps I may treat of it at greater length."

But there is no evidence that his own ideas of the nature of air would have furnished the answer to his questionings.

He died in 1657. Robert Boyle, who had settled in Oxford three years earlier, was that very year at work with Robert Hooke upon his air-pump. It was completed in 1659. He published his first account of the "New Experiments Physico-mechanical Touching the Spring of the Air" a year later, and 1661, the date of the second edition, is the date of Boyle's "Law."

The Five Tracts of John Mayow.

In 1658, a few months after Harvey's death, John Mayow in his eighteenth year went as a commoner at Wadham to Oxford, where Boyle had been working for three or four years. Two years later Mayow, in 1660, was elected a fellow of All Souls, where he studied law and took his bachelor's degree in 1665 after five years. He was, we are told, exempted from taking orders because he was also studying physic. In '68 he published his first tract, "de Rachitide"; the following year his second, "de Respiratione"; and in the next year, 1670, he took his doctorate of law.

ON RICKETS.

The "de Rachitide" is interesting first of all as in it we see how Mayow was saturated with the medicine of his day.* It opens thus:—

"There has been only one so far as I know who has written anything on the subject of rickets—namely, the distinguished Dr. Glisson, and that may seem strange, because as a rule disease as it stalks through the land cannot keep pace with the incurable vice of scribbling about it." "The disease," he goes on, "made its appearance some 40 years ago in the western parts of England and since then has infested infants' cradles through nearly the whole of England though more rarely the northern part of it."

Now that the causation of rickets is known, it would be an interesting subject for economic and historical research to trace, if this record is true, the cause of the appearance of this disease at that time and in those parts. He argues that the defective nutrition is not a defect of the blood. Nutrition, according to the ideas of that day, was conveyed also by the nerves. He shared this idea because, he says,

"everyone knows when a nerve is cut not only is sensation lost, but nutrition suffers. Moreover, when in an experiment on a dog I have accidentally wounded a nerve, on dissection after about three months I have found a fairly conspicuous glandular concretion where the nerve had been cut and this seemed to have its origin from the nervous juice escaping from the wound of the nerve."

Upon the nature of the contribution of the nerves to nutrition he gives his views in other places. Here he merely says that the nervous juice meeting and mixing with the blood produces a certain vigorous reaction and heat ("effervescentiam"). The sections at the end on the treatment contain many prescriptions which for those not familiar with the details of seventeenth century therapeutics are a revelation. The inclusion of 6 drachms of fresh butter in some of these is an accidental anticipation of modern practice; but it were better that we should not commemorate his advice that it should be administered in an extract *fimi equi non castrati recentis.*

ON RESPIRATION.

The tract on "Respiration" of 1669 is much more important. The first question he deals with, the entry of air into the lungs, at once shows the school in which he had studied.

"Some," he says, "attribute it to the abhorrence of a vacuum, or some fanciful attraction, others think that the air displaced by the expanding chest pushes adjacent air through the nose and mouth into the lungs, as if the air had an unalterable volume. Whereas if a fairly large bottle with a narrow neck be held to the mouth and the nostrils are closed, air is easily drawn into the lungs through the mouth from the bottle, though the surrounding air cannot be pushing it. The entry of air is effected by its elastic property, so clearly demonstrated by Boyle, and by the pressure of the superjacent air on that which is nearer the surface of the earth." . . .

"When a bladder squeezed nearly empty of air is tied at the neck and put into a glass from which the air is then pumped out, it is seen to swell however little air was left in it as soon as the pressure of the air outside it is removed."

In the second edition of this tract, published five years later, he adds the well-known experiment, which more aptly illustrates the entry of air into the lungs, in which the bladder is tied to the inner end of the pipe of a bellows, the valve hole of which has been closed with a glass window; as the blades of the bellows are separated the bladder can be seen to swell with air, entering it through the pipe and driven in by the pressure of the atmosphere.

"The structure of the lungs is adapted for their inflation in this way for they consist, as Malpighi has shown" (eight

* Foster mistakenly says that medicine was not Mayow's profession, and that it was law that he practised in the summer at Bath.

years previously), "of a system of most delicate membranes arranged so as to form an almost infinite number of orbicular vesicles communicating so that the air can pass from the trachea into them one after the other and inflate them as the lungs expand."

His description of the enlargement of the chest was in more than one respect for the first time correct, and particularly in that the double articulation of the ribs with the spine, which he was the first to describe in the second edition, 1674, owing to its obliquity when the ribs are raised causes not only the sagittal but also the lateral diameter of the chest to be enlarged. The importance and mode of action of the diaphragm, the significance of orthopnœa, and the small part played by muscular action in ordinary expiration are all clearly set forth.

But it is in the account of the use of respiration that the important revolution appears. The ideas that had been advanced before were three: (1) that the entry of air cooled the blood; (2) that the expansion of the chest drove the blood through the lungs; (3) that the passage of air in and out of the lungs so mixed and agitated the blood that the separation of fluid from solid, known to take place when blood was left to stand at rest outside the body, was prevented.

As to the first of these, he insists that air is necessary for activity and the generation of heat not for cooling the blood. This is a cardinal fact for him and is fully developed later. In the first instance, he may have owed this idea to Harvey, as we have seen. Secondly, the movements of the chest are not necessary for the pulmonary circulation to be carried out, though he recognises that they help it: blood injected into the pulmonary artery of a dead animal reaches the left ventricle without difficulty, and one has only to hold one's breath and feel one's pulse to recognise that plenty of blood circulates, although the lungs are not moving.

And, finally, that the air does not merely mechanically agitate the blood and so ensure it being properly mixed, as Malpighi maintained, in his letter to Borelli, "de Pulmonibus" 1661, is clear; "since any air, however often it had been breathed, should be equally effective for this purpose; but air that has been breathed repeatedly cannot maintain life." He quotes, too, "the experiment recently shown at the Royal Society," in which a dog with its chest opened was kept alive by a stream of air driven from a bellows through the trachea and escaping by punctures at the surface of the lungs. He does not mention that it was shown by Hooke, perhaps because a similar experiment had been done by Vesalius. But Hooke, and Mayow too, realised the importance of the experiment as showing that it was not necessary for the lungs to move in order that the animal should live, provided fresh air was supplied. If with the lungs distended to the same degree the dog's nose and mouth were closed it died.

"We may, therefore, state positively that something absolutely necessary to life is imparted to the blood by the air which is breathed; and when this, whatever it is, is exhausted the air becomes useless and no longer fit for respiration." . . . "Expiration has also this further use that in the expelled air certain vapours that exhale from the blood are at the same time blown out."

This last, however, is a point which he did not later attempt to develop.

"What it is in the air that is so necessary for life it is not easy to define. It probably is certain very volatile nitrous particles abundant in the air which are communicated through the lungs to the blood. This aerial nitre is so necessary for every form of life, that even plants will not grow in soil deprived of it. Even plants seem to have a kind of respiration and require air.

"What rôle this aerial nitre plays in animal life is our next enquiry. It appears that when duly mixed with combustible components of the blood it brings about a certain reaction not in the heart alone, but in every muscle that moves,"

in the heart because it is a muscle and, therefore, in its substance rather than in its cavities. For:

"it is necessary for every movement of the muscles, and without it there could be no movement of the heart; the more violent the movements the more intense and more frequent the respiration, because there is great expenditure of this explosive nitre made necessary by the chemical changes in the contraction of the muscles, and also, in the accelerated action of the heart which is made necessary by the richer flow of blood to the muscles.

"To this I add that it is proved by the experiments of the most illustrious Boyle that flies, bees, and other insects, after being cut through the middle can neither move nor live in a place void of air, though in the air they move for some time. These small animals, therefore, that have neither blood nor hearts nor lungs, at all events, in their divided parts, must needs have air it would seem for no other purpose but movement alone."

I have dealt in detail and quoted freely from this first treatise on respiration of 1669 because, while it is short and was written without the fuller development of experimental evidence that is found in the better-known publication of 1674, the position is made clear; the discovery of oxygen, aerial nitre, as a component of the air and its physiological importance is clearly outlined. A new planet swims into our ken.

MAYOW'S CONTEMPORARIES.

That Boyle had been an inspiration to Mayow is also clear. But there had been other influences. Robert Hooke went up to Christ Church from Westminster in 1653, in the year before that in which Boyle settled in Oxford; he was five years older than Mayow, eight years younger than Boyle. Even at school he had been experimenting with flying machines. He soon attracted the attention of the Warden of Wadham, Dr. Wilkins, who introduced him to Willis and so to Boyle. Hooke, we know, was working with Boyle at the construction of his air-pump already before Mayow went up to Oxford. The "Micrographia" was published by Hooke in 1665, four years earlier than the first "de Respiratione." In this work "the ingenious Mr. Hooke," as Mayow calls him, had revealed himself in the first place as a born experimenter, a genius, if a rather discursive one. But he had also expressed ideas very similar to those used by Mayow, though in a totally different connexion. He had examined with the microscope the structure of wood charcoal, "an object no less pleasant than instructive," and he proceeds to describe the dry distillation of wood and the part played by air in the process. He speaks of air as a menstruum in which combustible materials dissolve with liberation of heat and, if the process is sufficiently energetic, of light.

"This dissolution of combustible bodies is made by a substance inherent and mixt with the air, which is like if not the very same, with that which is fixt in saltpeter, which by multitudes of experiments that may be made with saltpeter will, I think, most evidently be demonstrated."

"Moreover," he adds, "the dissolving parts of the air are but few, and therefore a small parcel of it is quickly glutted, and will dissolve no more and therefore, unless some fresh part of this menstruum be apply'd to the body to be dissolved, the action ceases and the body leaves to be dissolved and to shine, which is the indication of it, though placed in the greatest heat; whereas, saltpeter is a menstruum when melted and red hot, that abounds more with those dissolvent particles, and therefore as a small quantity of it will dissolve a great combustible body so will the dissolution be very quick and violent. Therefore, as in other solutions, if a copious and quick supply of fresh menstruum, though but weak, be poured on or apply'd to the dissoluble body it quickly consumes it. So this menstruum of the air if by bellows or

any other such contrivance it be copiously apply'd to the shining body is found to dissolve it as soon and as violently as the more strong menstruum of melted nitre."

There is so much in this that is entirely new, and so much that appears again, mutatis mutandis, in Mayow's experiments and arguments that it is clear there must have been intimate communion between the two. Mayow, indeed, has been charged with plagiarism. It would be as fair to make this charge and perhaps easier to maintain it, against Hooke; he published the ideas first and Mayow was then 25 and unknown; when Mayow put them out Hooke was well known and in middle-life; not a good subject to play that game on. And, as a matter of fact, similar ideas appear in Lower's "de Corde" (Chap. V., published in the same year as the first edition of Mayow's "de Respiratione." Lower speaks of the nitrous spirit of the air passing into the blood, and states as a dictum "wherever fire can burn with ease we can breathe with ease," a fact established by the experiments described by Mayow). But here, too, there is no attribution to Hooke, nor for that matter to Mayow. But the fact that it was Hooke who proposed Mayow for the Royal Society in 1678 makes it likely that there was no plagiarism, but that Mayow, as a close student and admirer of Boyle, was also intimate with Hooke, and that they worked together, and Lower too, without stopping to define who had thought first of each experiment or each deduction. That Mayow added nothing is certainly not the case. To begin with, he was a physician and Hooke was not; his first philosophical interest was biology; Hooke was merely incidentally interested in biological science. Gifted with exceptional mechanical ingenuity, when a boy at Westminster he is said to have invented "thirty several ways of flying." His contribution to science was in the contrivance of experiments of all kinds; as a microscopist he was interested in the structure of charcoal and in explaining why it is black more than in the structure of the living plant. "It is not my design to examine the use and mechanism of these parts of wood, that being more proper to another inquiry," which he leaves alone. He graduates thermometers, but not for physiological experiments. It is in contributions to the technical perfection of the air-pump, and his machine for cutting cogs in clock wheels, that he was at his best. In the preface to his book he says he has "gleaned up here and there a handful of observations in the collection of which I made use of microscopes and some other glasses that improve the sense"; just a discursive miscellany. There, too, he defines his own position in science.

> "It is the great prerogative of mankind above other creatures that we are not only able to behold the works of nature, or barely to sustain our lives by them; we have also the power of considering, comparing, altering, assisting, and improving them to various uses. By the helps of art and experience some men excel others almost as much as they do beasts. By the addition of such artificial intruments and methods there may be in some manner a reparation made for the mischiefs and imperfection mankind has drawn upon itself by negligence and intemperance and a wilful and superstitious deserting of the prescripts and rules of Nature."

As a philosopher he was typical of the best that the seventeenth century was doing for experimental science. The remedy for the errors of human reason can only proceed from the substitution of

> "the real, the mechanical, the experimental philosophy for the philosophy of discourse and disputation that chiefly aims at the subtilty of its deductions and conclusions without much regard to its first ground work." . . . "All the fine dreams of opinions which the luxury of subtil brains has devised would then quickly vanish and give place to solid histories, experiments and works." . . . "The links upon which true philosophy depends are to begin with the hands and eyes, to proceed on through the memory, to be continued by the reason; nor is it to stop there but to come about to the hands and eyes again and so by a continual passage round from one faculty to another it is to be maintained in life and strength as much as the body of a man is by the circulation of the blood through the several parts of the body, the arms, the feet, the lungs, the heart and the head."

He was, indeed, worthy of a place in the great quartet of Oxford students, who in the decade following Harvey's death were led by Boyle; but Boyle was first fiddle, Hooke second, and the subjacent biological ground-tones were supplied by Lower and Mayow.

Mayow did not merely hang himself on. If Boyle and Black and Cavendish are the great names in the share that this country had in the creation of physical chemistry, Mayow's is great for the part he played at the birth of biological chemistry, a science to which chemistry owes as much as biology, and without which chemistry would have but three legs to stand on. If the ideas in his work did not all originate with him (the evidence does not make it clear that they did not), by his own experiments he not only established them and made them his own, he extended their implication into fields of thought that meant much less to other members of the team with which he worked.

The ideas are there in this first edition of the "de Respiratione" published in '69, the year after Boyle moved to London. Five years later, in the "five tracts," they are extended, enlarged, and the experimental foundations for them given in a way which amply justifies the place that this estimate of his work assigns him.

LACK OF CHEMICAL DEFINITIONS.

It is difficult for us to-day—at first reading I, at any rate, found it impossible—to do justice to Mayow's "de Sal Nitro," the most important of the five tracts that appeared in 1674, two of which are merely new versions of the earlier ones. When he wrote hardly any of the terms, hardly any of the ideas which are the alphabet of chemistry had been defined. The mists and vapours of the middle ages obscured everything. It is universally recognised that in order to understand the greatness of what Harvey did it is imperative to know what had been before; how in the history of human thought Greece and Rome had had to pass away, a new civilisation to arise, and after seven centuries also pass away, and yet two centuries more go by before the light shone out that was lit by Harvey. But in that field the Renaissance had then been at work for three generations, even if we disregard all anatomy before Vesalius.

The Renaissance had done nothing for chemistry. Van Helmont, almost exactly Harvey's contemporary, was the only forerunner in the seventeenth century, Paracelsus in the sixteenth, Basil Valentine in the fifteenth. Van Helmont was hardly more clear of mediæval entanglements than Paracelsus. It is true he weighed the growth of a tree and proved that the increase of weight did not come from the soil. But he concluded that the tree must be made out of water, and argued that the gas into which it was converted when burnt was also transformed water. The "incoercible" gas, "gas sylvestre," given off by fermenting grapes was no less water. In the six fermentations which he is at pains to describe by which food is assimilated to form the living body there is hardly anything that we can recognise as conforming to fact, as there is nothing that rests upon accurate observation or experiment.

Paracelsus or the Arabs themselves could have done as well.

There are but few sidelights on the position of chemistry at the time in England. The sagacious Harvey, we are told, "did not care for chymistry, and was wont to speak against the chymists." In a well-known passage John Wallis, Sedleian professor of geometry, describes the society of philosophers that met weekly in London, from at any rate 1645, out of which the Royal Society arose, and how

"about 1648 some of our company being removed to Oxford our company divided, those in London continued their meetings there, those of us in Oxford did likewise and brought those studies into fashion there, meeting first at Dr. Petty's lodgings, *in an apothecary's house because of the convenience of inspecting drugs.*"

But there were no chemists of the company. Afterwards the meetings were held at Wadham at the lodgings of the Warden, Dr. Wilkins, later—some time after 1654—at those of the Hon. Robert Boyle. In 1659 we are told by Anthony Wood, the antiquarian and gossiping historian of Oxford notables, that Boyle brought from Strasbourg "the noted chemist and Rosicrucian Peter Sthael" to lecture in Oxford, and settled him in the house next door to his own lodgings so that the "elaboratory" which he had there might be convenient for Sthael's use. Sthael apparently lectured for some years; for in 1663 Anthony Wood himself attended. "The club consisted of ten at least"; he mentions names, among them not Mayow's, but "John Lock, of Ch. Ch., afterwards a noted writer," also, you remember, a physician.

"This John Lock was a man of a turbulent spirit, clamorous and never contented. The club wrote and took notes from the mouth of their master who sat at the upper end of the table but the said John Lock scorned to do it so that while every man else would be writing he would be prating and troublesome."

Boyle therefore, one of the inquiring minds who were putting into practice what Bacon had preached, was, unlike Harvey, interested in chemistry. But after the first year of Sthael's course, which he presumably followed, he published, anonymously, it is true, to spare no doubt the feelings of his protégé, a destructive criticism of the chemical philosophy of the day, "The Sceptical Chymist." It should have long been clear that the four elements of the Peripatetics could not suffice when experimental chemistry began. But the name of Aristotle kept them in sway, and experimental chemistry had been limited to the action of fire and the use of crucibles and retorts inherited from the alchemists. The empirical chemists since Basil Valentine, who appear to have been seldom great thinkers, had supposed that the properties of different forms of matter depended on the proportions in which the Tria Prima occurred in them, volatile mercury, combustible sulphur, and incombustible non-volatile salt. Paracelsus dreamed of a whole system of medicine based on this sort of chemistry. In the "de Origine Morborum ex Tribus Primis Substantiis" he says:—

"when you take a bit of wood into your hand, your eyes tell you it is a bit of wood, a single substance; that is no use; a rustic can see that. You will see deeper below the surface and know that what you hold in your hand is mercury, sulphur and salt. It is not till you recognize this that you can be said to see with the eyes of a true physician. He can see this as clearly as the rustic his bit of wood; and what is true of the bit of wood is true of the human body. Whatever burns is sulphur" (and he instances resin, gum, turpentine, fat, butter, oil, and strong wine), "whatever smokes or can be sublimed is mercury, whatever is left as ash is salt."

Bacon commended and adopted this system of the chemists, and in 1622 published the outline sketch of a work he had planned, "Historia Sulphuris Mercurii et Salis."

Now that people were beginning to use their hands and eyes in the inquiry of truth and to think clearly it was easy to see that this would not do. But in the "Sceptical Chymist" there is little that is constructive.

NITRE AND OXYGEN.

Mayow therefore found in chemistry no terms that had been defined, only such as meant one thing at one time and another at another.

"Among the elements of the Peripatetics," he says in the fifth chapter of the "de Sal Nitro," "the two chief are fire and air. For these two our nitro-aerial Mercury" (i.e., oxygen) "might justly be substituted, since it possesses a really fiery nature, and constitutes also the most active part of the air. As to the 'spirit' of the chemists" (that is Mercury), "which usually heads their array of elements, what they mean by this high-sounding term I simply cannot understand; for the spirits of fermenting liquors which flare up when thrown on the fire should be included in another element of the chemists which they call sulphur" (meaning combustible matter); "while the corrosive spirits" (spirit of salt, spirit of vitriol, spirit of nitre) "should be dealt with among the salts" from which they are obtained. "If the word spirit is to be retained it is more appropriate for the nitro-aerial particles in the air, at one time executing motions that are placid, at another the most violent imaginable."

"In the census of the elements sulphur deserves the next place because after our mercury it is the most fermentative. It too may at one time be sluggish and inert, at another attain full vigour and maturity or even be untameably wild. From the conflict between these two" or as we should say from the oxidation of organic substances "all the mutations in nature seem to arise."

Then come the salts, which include both the acids and the alkalis, whether fixed or volatile, of which salts in the modern sense are formed. In actual use the term "purely saline salt" means alkaline ash; "acid salt" means the acid component of a neutral salt. Salt of tartar would be potassium carbonate, salt of wormwood the ash of wormwood." For the rest there is the ubiquitous water, and no less ubiquitous terra damnata, the lifeless earth, dead and damned, that may be left to mineralists.

That is at least a beginning, a scheme that provides a setting for what to Mayow, the biologist, is the cardinal fact in chemistry, that not only the heart but the whole body lives and moves by the union of oxygen with fuel carried by the blood.

The basal facts upon which he builds are two: first, that in the air there is some one and the same thing, having the same physical properties as the rest of the air, but forming only a comparatively small part of it, which is necessary alike for burning and for supporting life; the second, that in nitre this same thing is present, and for this reason combustible matter will burn if mixed with nitre even in the absence of air.

It is with the second of these themes that he deals first in the opening chapters of the most important of the Five Tracts, the "de Sal Nitro." Nitre can be found in the soil only when air has access to it; the air then contributes something. But the soil certainly contributes something too, "for nitre is formed in greater abundance in soil impregnated with fixed or volatile salt, as in the neighbourhood of stables, dovecotes or slaughter-houses, and also from soil containing quicklime or ashes." And he knows that when nitre is heated with tartar the acid spirit of nitre escapes, and much more alkaline ash is obtained than is obtained by heating tartar alone, so that nitre contains some fixed salt. This fixed salt is also obtained from nitre when it is heated with oil of vitriol so as to drive off the acid spirit of nitre, the fixed salt being left as the vitriolate, which had all

the medicinal and other properties of vitriolate of tartar (potassium sulphate). And similarly true nitre can be made by neutralising spirit of nitre with salt of tartar (potassium carbonate). Therefore the fixed salt in nitre certainly is derived from the soil. The other component of nitre, the acid spirit, nitric acid, does not itself exist in the air any more than nitre itself. "It is probable that the spirit of nitre is a compound, and that some of its particles to which it owes its humid and grosser nature are derived from terrestrial matter; others dry and extremely subtle, agile, ethereal, and really igneous, these at any rate are certainly derived from air." The cautious reserve with which this statement is made was justified 100 years later when Cavendish showed that both kinds of particles existed in the air and could be made to unite by the passage of electric sparks through it.

The part of nitric acid which, according to Mayow's experiments, is certainly derived from air is nothing else than oxygen—"those igneo-aerial particles which are absolutely necessary for the production of flame; let me, therefore, henceforth call the fiery particles which occur also in air nitro-aerial particles or nitro-aerial spirit."

To account for the other component of nitric acid, the evidence justifies him in concluding that it may be present in what we should call organic matter in the soil, for which the chemists had provided him with no better term than "sulphur"; and the formation of nitric acid from this leads him to a remarkable discussion of the part played by oxygen in the formation of acids generally, instancing the conversion of iron sulphide by moist air into sulphate from which the acid spirit of vitriol can be obtained; this is also the work of the nitro-aerial particles of the air, "much as in the formation of rust or in the souring of ale or wine." In fact, if he had but given these particles a Greek name he would have called them oxygen, and for the same reasons as those for which Lavoisier introduced this word 100 years later.

ACIDS AND BASES.

A very important section, also on a purely chemical subject, the mutual affinities of acids and bases, comes later in the treatise (Chap. XIV., "of the heat of quicklime; incidentally of the combination of contrary salts"), and is a clearer exposition of the subject than had yet been given.

"Although acid salts and alkalies pass into a neutral substance when they meet yet they do not as is generally supposed entirely destroy each other. For example when the acid spirit of salt is coagulated with sal volatile (and the same is true of sal alkali) although the mixed salts seem to be destroyed, yet they may be separated again with their forces unimpaired. This happens when sal armoniac, or any volatile salt combined with an acid spirit, is distilled with salt of tartar (potassium carbonate). For then the whole of the acid in the sal armoniac will be coagulated with the fixed salt of tartar but the volatile salt of which it also in part consists will escape of the same nature as before. And the reason of this is that the acid spirit of salt is prone to enter into closer union with any fixed salt than it is with a volatile salt, so that it immediately leaves the volatile salts to combine more intimately with the fixed salt. If on the other hand oil of vitriol be united with salt of tartar they can scarcely be separated from one another, not because they have mutually destroyed one another but because there is nothing in nature with which either of them can unite more firmly than they do with each other." "As acid salts leave volatile salts to form a closer union with the fixed salt of tartar as with a more suitable spouse, so no doubt fixed salts select some one acid in preference to another that they may combine with it in a closer union.

The behaviour of nitre with oil of vitriol illustrates this.

"The acid salt of nitre will pass under a mild heat into the receiving vessel, whereas otherwise that spirit will not be carried up except by a very vehement fire. And this is so simply because the acid salt of nitre is volatile and the more fixed vitriolic acid thrusts it from its consort the sal alkali so that it is released from its ties and carried up under the action of no more heat than is necessary for the rectification of spirit of nitre whereas otherwise it can hardly be divorced from fixed salt unless it be by the most intense heat. The mass left in the retort closely resembles vitriolated tartar and can fitly be substituted for it."

More follows, as on the combination of metals with acids, on the sulphides of alkalis and metals, and on the theory of incompatibles, that is equally lucid because it rests on orderly experiment done with understanding. The application of the same ideas to the relation of quicklime to slaked lime and the carbonates fails; but nothing better was done with this for 80 years. The experiments are correctly carried out and observed, but without Black's fixed air and the differentiation of mild and caustic alkalis the explanation goes astray.

This work was published when Mayow was 34; he had taken his doctorate in law four years earlier; he was practising medicine at Bath through the summer; his real interest was the physiology of respiration; he apparently did not consider himself ready to take his doctorate of medicine, but he found time to bring order into the chemical thought of the day in the intervals of his other occupations.

Oxygen in Respiration.

The discovery of oxygen, by far the most important step yet taken in the history of chemistry, was of still greater interest in relation to the physiology of respiration. The experimental development of this is in the seventh and eighth chapters of the "de Sal Nitro."

When a mouse is placed under a bell jar that rests upon a wet bladder stretched over the mouth of a larger vessel the animal, as it breathes, removes from the air under the jar the component of the air that is taken up in its lungs, and the bladder bulges into the bell jar as the pressure is reduced in it, so that the larger vessel may be lifted bodily by lifting the bell jar. This is precisely similar to what happens when a flame has been burnt in a cupping-glass applied to the skin. Similarly, he describes in detail experiments in which he measures the amount of air consumed by a candle burning or by an animal breathing under a cupping-glass immersed in water. When the candle goes out and the levels have been duly adjusted, the water is found to occupy one-thirtieth of the space previously occupied by air, when the mouse dies one-fourteenth. In neither case is it possible to kindle in the air that is left combustible matter by means of a burning-glass, as can readily be done in fresh air.

These experiments could not have been done in Harvey's lifetime, because the conditions under which alone they could be done had not been defined by Boyle. Mayow carried them out with all precautions that could then be devised, and though they suffer from the defect that no account is taken of gaseous products of combustion or respiration, they open an entirely new chapter in the history of both chemistry and physiology. The alembic and crucible no longer constitute the entire armament of the chemist; there is something better for him to do than to go on for ever distilling off mercury from blood and urine.

"Clearly something in the air is absolutely necessary for life and enters the blood in respiration, for if the need for respiration were that the blood may be shaken up and divided into the minutest particles by the movement of the lungs the animal should not die so soon, for the air that is left should be able to do this perfectly well; and as it is subject to nearly the whole pressure of the atmosphere there is

no reason why it should not enter the expanded chest; for I have shown that it is the pressure of the atmosphere that causes it to do this."

"It is true," he continues, "the bluntness of our senses prevents us from seeing the passages by which the air enters the blood," just as it prevented Harvey from seeing those by which the blood passed from arteries to veins.

"They must be exceedingly short and minute for they merely have to pass through the membranes of the lungs; and they must be almost infinite in number. And yet in lungs that have been boiled and dissected an almost infinite number of perforations like the minutest points can be seen with the microscope. Whether they are the mouths of capillary tracheæ I cannot say.

"Animals and fire draw particles from the air so that it loses elastic force; that these particles are of the same kind in each case is established. If in a similar experiment to those previously described a lamp and a mouse are at the same time enclosed in a glass over water the lamp goes out first and the animal dies later. But the animal dies in about half the time that it would have been able to live had the lamp not been there. It is not suffocated by the smoke of the lamp for the same result is obtained if spirit of wine is used; moreover, I have tried to kindle with a burning-glass, in a vessel in which an animal had died from exhaustion of the air, combustible material previously hung in it. I had protected a part of the inside of the vessel from the condensed breath of the animal by a piece of paper which I could pull away by a string passing out below the mouth of the vessel. But it would not take fire. I shall not, however, make a final statement on this because the season being winter and the sky almost continuously covered with cloud I was not able to repeat the experiment."

"When the lamp goes out or the animal dies the remaining space is filled with air diminished in volume but able to resist the pressure of the surrounding air. I have indeed ascertained that such air is possessed of no less elastic force than any other air, for when the pressure of the atmosphere is removed it expands with no less vigour than common air."

Mayow published nothing after the five tracts. Four years later he was elected to the Royal Society on Hooke's nomination, left Oxford, and was married, and the following year he died in an apothecary's shop off Covent Garden, and was buried in St. Paul's Church there. He was 39. He was the youngest of the Oxford quartet and the first to die. The five tracts were translated into Dutch five years later, into German 125 years later in 1799, into French in 1840, and into English in 1907.

The only reference to his work for more than 100 years after his death appears to have been made by Stephen Hales. His work was forgotten. His discoveries rediscovered were the starting-point of modern chemistry. By that time men's minds had become ground in which the seed could germinate.

You will, I hope, think that in our commemoration it is fitting that he should be remembered in the twentieth century if only because he was so sadly forgotten in the eighteenth.

HOSPITAL WORK IN YORKSHIRE.—The area and scope of the Yorkshire voluntary hospitals' committee have been enlarged by the inclusion of most of the North Riding, and by the addition of delegates from hospitals and bodies not previously represented. The annual report of the committee states that "the fundamental consideration in this work has been that the maintenance costs of patients sent to any particular hospital should, as far as possible, be provided by the district from which they come." A subcommittee which has been considering the feasibility of creating a contributory scheme for the whole area has been unable to suggest a plan. At last week's meeting of the committee it was suggested that insurance companies should pay hospital expenses direct to the hospitals instead of to the victim of the accident. Last year motor accidents cost York county hospitals £1300, of which only £300 was recovered. The Hull area has now been organised by the formation of a voluntary hospitals' contributory council.

THE ACTION OF THE SERUM OF NORMAL INDIVIDUALS ON THE VIRUS OF POLIOMYELITIS.

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ACUTE anterior poliomyelitis is a disease to which young children are peculiarly susceptible. The comparative immunity of adults to this disease has never been definitely explained. Aycock (1928), as a result of a statistical survey of the age-distribution of measles, diphtheria, and poliomyelitis in urban and rural communities, found that the age-distribution of the three diseases was similar. In explanation of this phenomenon he conceived that the comparative immunity of the adults to poliomyelitis was to be attributed most probably to unrecognised attacks of the disease, as in the case of the other two diseases. This hypothesis has recently received support in America from actual examinations of the anti-viral content of the serum of normal people by means of the neutralisation test in monkeys. This test, it may be mentioned, is the only one of general application for the study of immunity to this disease. The results here recorded confirm the statements that the sera of contacts, who have never had the slightest sign of the disease, may neutralise the polio-myelitis virus. It must be admitted that the number of cases examined is not great, but as one monkey is required for each test an investigation on a large scale, at least in this country, is not practicable. Consequently it is necessary to rely upon an accumulation of results from many small series such as this to establish the fact on a satisfactory basis.

The observation of Netter and Levaditi (1910) that the serum of convalescent poliomyelitis patients, after contact with the virus in vitro for a certain time, would inactivate the virus, has been confirmed repeatedly. On the strength of this finding the use of convalescent serum in the therapy of the disease has been definitely established (Davide, 1928; Macnamara, 1928; Aycock, Luther and Kramer, 1929). Netter and Levaditi (1910) later found that the serum of an abortive case had this neutralising property, while normal human serum (one sample tested) had no influence on the activity of the virus. Anderson and Frost (1911) also showed that serum from abortive cases possessed neutralising properties, and, moreover, found that several samples of serum from normal people contained antiviral bodies. Leake (1918) obtained evidence of the presence of neutralising bodies in the serum of one of three normal persons; this one positive case was a contact, the other two were not. Shaughnessy, Harmon, and Gordon (1930) have recently published some very interesting results. They found that the serum of normal infants under 2 years had little effect on the virus, while that of normal individuals over 2 years had, generally speaking, the same effect as convalescent serum on the virus of poliomyelitis. The largest series of observations on this question has also been recently recorded in America by Aycock and Kramer (1930). They examined 75 normal individuals and obtained neutralisation in about 50 per cent. of cases. The sera of urban persons

neutralised more frequently than those of rural, and, in both communities, the chance of neutralisation increased with age. Later they obtained similar results from an examination of a smaller series in a Southern State. Thus it seems that the serum of persons, who have never obviously suffered from poliomyelitis, may possess antiviral activity comparable, if not equal, to that found in convalescent serum.

The first indication that the serum of a normal individual might possess antiviral activity was obtained here some time ago when, in order to supply an extra control of the antiviral activity of several samples of convalescent serum, a sample of normal serum (R. W. F.) was also mixed with the test virus. The animal inoculated with the saline control became infected and died, while all the others remained well. An opportunity arose of continuing this study when in the course of last autumn a small outbreak of bulbar poliomyelitis occurred in a private boarding school at Sevenoaks.

TECHNIQUE.

The neutralisation test was adopted for the examination of the various samples of serum. In this test 0·6 c.cm. of the various samples of serum was mixed with 0·4 c.cm. of a 5 per cent. virus emulsion; after contact at 37° C. for 1½–2 hours and overnight at 4° C. the mixture was agitated and 0·5 c.cm. inoculated intracerebrally into a *M. rhesus* under ether anæsthesia. The test virus in all cases was very potent, the dose employed in the test containing at least 100 minimal infecting doses. Its activity has been discussed in more detail elsewhere (Fairbrother, 1930). In all cases a saline control was employed.

Results.

Some time after the attack had occurred in the school (about six months), samples of serum were obtained from various pupils—convalescent and abortive cases, close and remote contacts. The abortive case, E., was the first observed in the epidemic, and had a high temperature, with marked pharyngitis, but without any obvious nervous involvement. In one instance three samples of convalescent serum were pooled, otherwise each sample was tested separately. The activity of the virus was controlled by mixing the virus with saline in the same proportions as in the case of the serum. The results of the experiment are given in Table I.

TABLE I.

Serum.	Nature of case.	Result.
A .. .. 13 yrs.	Convalescent.	0
B 11 ,, } pooled	,,	0
C 9 ,, } pooled		
D 7 ,, } pooled		
E .. .. 9 ,,	Abortive.	0
F .. .. 8 ,,	Brother of B } Close contacts.	0
G .. .. 13 ,,	,, A } Close contacts.	0
H .. .. 10 ,,	Contacts } Remote.	0
I .. .. 8 ,,	,, } Remote.	0
—	Saline control.	+ (5 days)

Key: {0 = no infection. + = infection (with the incubation period).

The findings were similar to those obtained by the American workers. The control animal became infected after an incubation period of five days, while all the other animals remained quite well, thus indicating that the serum in all cases contained antiviral bodies. A degree of immunity was found to be present in contacts who had never had the slightest sign of poliomyelitis, but whether this immunity was the result of contact with definite cases in this outbreak or had been acquired at some previous period could not be decided. The former explanation seems the more probable. Owing to shortage of monkeys it was not possible to compare the degree of protection afforded by the sera of the contacts and the convalescents.

It was considered important to perform similar tests with the sera of children who had never, so far as one could ascertain, been in the vicinity of a case of poliomyelitis. Unfortunately this could be carried out only on a very limited scale. The serum of two pupils who arrived at the school after the outbreak had settled down, and one infant,* 3 months old, living in the East End of London, were examined. The results are given in Table II.

TABLE II.

Serum.	Result.
J (9 years)	0
K (7 years)	+ (5 days)
L (3 months)	+ (11 days)
— (saline control)	+ (6 days)

Evidence of the presence of antiviral bodies was obtained from one sample of serum. In the case of the other two, one animal became infected after a slight prolongation of the incubation period; this might have been due to the remains in the serum of antiviral bodies passively transmitted from the mother as the case was a young infant (Aycock and Kramer). Little of value can be obtained from this table. It indicates, however, that antiviral bodies are not found in every sample of serum, and also that persons who have never been in contact with a case of poliomyelitis may possess some degree of immunity against this disease.

Conclusion.

Immunity to the poliomyelitis virus, as indicated by the presence of antiviral bodies in the serum, is frequently present in normal people who have been in contact with definite cases of the disease without developing it. The results recorded here support Aycock's view that the observed immunity of adults to poliomyelitis is most probably due to "subclinical" infections.

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* This serum was obtained by the kindness of Dr. Temple Grey.

DEWSBURY INFIRMARY.—This new hospital was estimated to cost £98,000; it is now officially stated that a total expenditure of £150,000 will be necessary. Several extra departments have been added to the original scheme, and many improvements have been made structurally and to minimise the cost of maintenance. The main block has cost £1100 per bed, which the architect, Mr. T. W. Sharpe, thinks is "not excessive." A further £26,000 is required.

LYMPHANGIOMA OF THE ABDOMEN.

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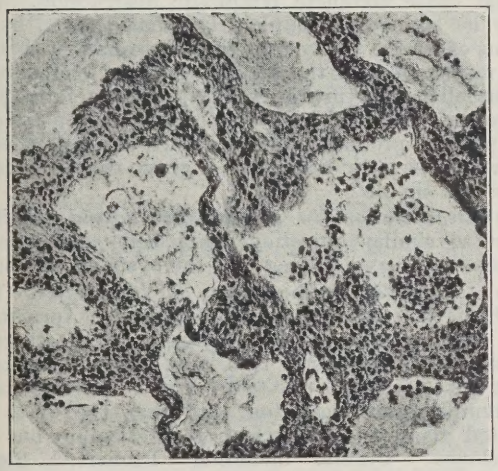
A LYMPHANGIOMA is an organised neoplasm of endothelial-lined vessels and the supporting tissues which go to make up the lymphatic system. All these structures are involved in the overgrowth. Distinction must be made between lymphangioma with new tissue formation and lymphangiectasis with dilatation of pre-existing structures.

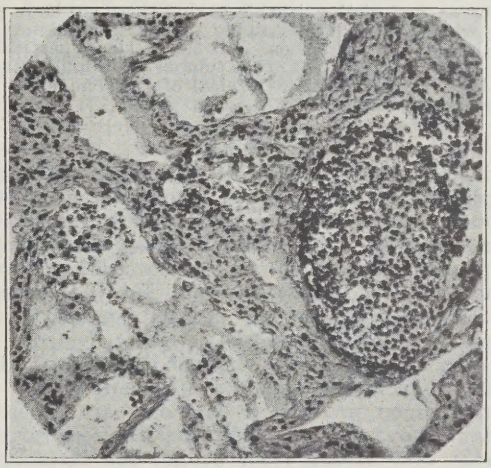
Perhaps the most interesting lymphangiomas are those arising within the abdomen, where they occur in the mesentery or omentum, or retroperitoneally. They may be found in children or adults as multilocular, cavernous, or cystic tumours which do not affect the receptaculum chyli or thoracic duct, and are almost certainly of congenital origin, arising from developmental disturbance or misplaced islands of lymphatic anlage. Such islands have been demonstrated in the omentum and mesentery of new-born pigs by Ranvier.[1]

FIG. 1.



Section of main tumour showing endothelial-lined channels.

FIG. 2.



Another section showing the channels and a lymph node.

A more complete knowledge of the embryology and physiology of lymphatics will possibly enable the pathogenesis of these tumours to be traced in detail. According to Fisher[2] about 50 cases have been recorded in which the mesentery or omentum has been involved. Half of these are not true neoplasms but cases of lymphangiectasis and inflammatory hyperplasia. On the other hand, failure to appreciate the inclusion in lymphangioma of all tissue elements which take part in the formation of the lymphatic system has led to the inclusion under other headings of tumours which are almost certainly lymphatic. It does not seem correct, moreover, to exclude from the total all those cases in which symptoms have first occurred in adult life. Other tumours of known embryological origin lie dormant until childhood has passed. Comparatively few of the recorded cases occur in British literature, that of Spencer Wells in 1890 being, perhaps, the first.[3]

Record of a Case.

A boy, aged 8 years, was admitted with the history that two days before he had been "butted in the stomach" by a boy at school, and had that night complained of severe abdominal pain. He had vomited twice. The bowels were well open three hours before admission. The parents had noticed that he had always had a "big stomach," but he could run and play normally, though there were occasional "bilious attacks," with colic.

The child was thin, lying on his left side with his knees drawn up and crying with pain. He refused to lie on his back or to straighten his legs. The abdomen was distended and tense; there was general resistance but no absolute rigidity. The lower costal angle was widened. The percussion note was dull over the centre of the abdomen, and extended to the flanks and both iliac fossæ; the liver dullness was diminished. The temperature was 99·3° F., the pulse-rate 120, and the respiration-rate 28.

Mr. Morgan Jones opened the abdomen by a mid-line incision. A large cyst with injected walls was found apparently attached to the region of the duodeno-jejunal flexure. It could not be freed, and was packed round and opened. About four pints of odourless brownish fluid escaped. The cyst wall appeared to be about 2 mm. thick, and of a fibromuscular structure. It was thicker at the base and had necrotic-looking material attached to it. Round the base were three small thin-walled cysts containing clear fluid. Most of the cyst wall was removed, but the base was attached to a firm retroperitoneal mass about 2·5 by 5 cm., the upper and lower edges of which could not be clearly defined. The patient became collapsed, and the abdomen was closed, after inserting a drainage-tube to the pelvis.

The child appeared to make a good recovery, but three weeks later commenced to vomit, with attacks of colicky pain and distension of the abdomen. The temperature was 102° F., and the pulse-rate 86. The old incision was reopened and free serous fluid evacuated. A mass was found attached to the posterior abdominal wall slightly to the left of the mid-line, extending between the second and fourth lumbar vertebræ. It resembled a fibroid uterus in colour and consistency. On incision it was fairly firm and not hæmorrhagic. No abscess was found. The mass was considered to be sarcomatous, and the abdomen was closed. After a temporary improvement the condition steadily became worse; the lower part of the wound broke down, and the boy died four weeks after the second operation.

POST-MORTEM EXAMINATION.

The body was markedly emaciated. The abdomen was scaphoid, with a mid-line scar healed in its upper portion, but opening lower down into a large cavity in the pelvis, 3 cm. in diameter by 4 cm. deep, covered with granulation tissue. Post mortem lividity was absent; there was an anterior staphyloma of the left eye. On opening the abdomen, multiple thick adhesions were exposed and a pocket of pus was found in each iliac fossa. All the small intestine was on the right side and shut off by omentum. There were more adhesions round the liver, behind which was an intraperitoneal subphrenic abscess. Commencing opposite the second lumbar vertebra, to the left of the mid-line, was a smooth-surfaced tumour lying in the retroperitoneal fascia. It was about 1 cm. by 0·5 cm. in size, at the upper end, increasing to about 3·5 cm. by 2·5 cm. at the lower end as it merged into the mass of inflammatory tissue in the pelvis opposite the fifth lumbar vertebra. The

peritoneum stripped from the tumour, but the latter could not be shelled out from the fascia behind. The upper end was connected to ten strands running up in the loose tissue to the cœliac region. On incising the tumour, the cross section resembled corpora cavernosa. No macroscopical cysts were seen in the tumour or omentum. The mesenteric lymph glands were normal.

MICROSCOPICAL EXAMINATION.

1. Cyst wall: section shows a fibromuscular structure, covered on the outside by peritoneum, and with the inner lining mostly destroyed, though here and there are a few flattened cells. There are numerous lymphatics and blood-vessels in the wall, and plain muscle-fibres form an incomplete layer in the fibrous tissue. The whole section shows inflammatory reaction.

2. Transverse sections of the tumour: the sections show fibrous tissue of varying density containing numerous spaces lined by flattened cells. In some areas these spaces are so numerous that only a single layer of the flattened cells separates the cavities; in others there is proliferation of the flattened cells, which may show as many as three or four layers. For the most part these channels are cut transversely, but occasionally one is seen in longitudinal section. In the regions of greatest activity—i.e., where the channels are most numerous—solid nodes of cells are seen, with a small clear space extending partly round them and separating them from a surrounding ring of flattened cells. In these nodes are many round cells, some polymorphonuclear leucocytes, and distinguishable behind these are large paler cells with large, light-staining nuclei, resembling the reticular cells of the spleen. All the sections, particularly those from the caudal end of the tumour, show inflammatory reaction. The sections are typical of lymphangioma with inflammatory changes.

Diagnosis.

Diagnosis is a matter of difficulty. Abdominal lymphangiomas only cause symptoms when they produce obstruction in surrounding organs or become cystic. Obstruction from uncomplicated lymphangioma must be rare—no recorded cases were found—and in the cystic condition the enlarging abdomen may be the only symptom unless trauma, infection, or torsion bring about acute changes.

Hearn,[4] Arzela,[5] Brandt,[6] and Stillman[7] have made pre-operative diagnoses of omental cyst. The most common provisional diagnoses are tubercular peritonitis, ovarian cyst, and retroperitoneal sarcoma. A large cyst arising from behind the intestines is responsible for the resemblance to ascites. Encysted fluid may sometimes be differentiated by comparison of the percussion notes in the vertical and Trendelenburg positions. In the case recorded, attention is drawn to the refusal of the child to lie on the right side, in view of the attachment of the tumour to the left of the mid-line.

Differentiation of the mesenteric cysts is not easy even at operation. They are mostly of congenital origin, and may be classified as follows [8]:—

- Congenital
  - Simple
    - Serous.
    - Chylous.
    - Irregular occulsion of Meckel's diverticulum.
  - Neoplastic
    - Ectodermal—epidermoid.
    - Mesodermal
      - Lymphatic
        - Lymphangioma.
        - Chylangioma.
      - Wolffian.
    - Enterodermal
    - Teratoma from fœtal inclusion.
- Congenital cysts (simple or neoplastic) complicated by intracystic hæmorrhage.
- Acquired
  - Pseudocysts
    - Hæmorrhagic.
    - Inflammatory.
  - True
    - Parasitic.
    - Malignant.
    - Gaseous.

Microscopical section will determine the nature of the cyst if the lining membrane is present, but not infrequently in the larger cysts it is destroyed, and in the pseudocysts there is no lining. The remainder of the cyst wall is scarcely sufficient on which to base a diagnosis. Plain muscle may occur in enterogenous, lymphangiomatous, chylous, and Wolffian cysts. Dilated and increased lymph-vessels are present in the walls of the lymphatic cysts—possibly due to the cyst arising from within the tumour mass—and have a flat endothelial lining. In large cysts, or where inflammation or hæmorrhage has occurred, the lining may be destroyed.

Pathogenesis.

Many theories have been put forward to explain the origin of cystic lymphangioma of the abdomen.

(*a*) *Stasis and retention in normally formed lymphatics.*—This is probably the ætiology of many of the recorded cases of lymphatic cyst of the mesentery, but it is dilatation, not new growth. Fisher considered his case to be due to inflammatory changes in the lymphatics following an attack of tonsillitis several years previously. Outerbridge [9] regarded the majority of lymphatic cysts of the omentum as of this nature. In his own case the cysts occurred in an omentum attached to a large uterine tumour. He investigated the anatomical arrangement of the omental lymphatics and concluded that such adhesions would cause complete lymphatic obstruction. This may be adduced to explain lymphatic cysts, but it seems excessive to say that the inflammatory changes are responsible for the actively growing lymphangio-endothelial structure of which the cysts form part. Moreover, why should obstruction in peritoneal lymphatics produce cysts without œdema, whereas elsewhere—e.g., in filariasis—it gives rise to œdema pure and simple?

(*b*) *Degeneration in a lymphatic gland.*—This is open to similar objections, and it is anatomically impossible to explain many of the cysts on this basis.

(*c*) *Congenital malformations of lymphatics.*—This is the most strongly supported theory of formation, but there is considerable dispute as to the stage of development at which it occurs. Arzela considers that the condition is due to an error in the early stages of lymph-gland formation, and that the cysts are dilated gland walls in which the reticulum has not developed. Others, including Ribbert,[10] Sick,[11] Henchen,[12] and Ewing,[1] believe that their origin is from primary lymphatic anlage. The abdominal lymphatic system arises mainly from the retroperitoneal primary lymph sac.[13] This, by division and outgrowth, forms the lymph glands and ducts, both retroperitoneal and mesenteric. It is capable, therefore, of forming all the elements of the lymphatic system. Uncontrolled hyperplasia of an occluded portion of this tissue, then, would produce a tumour containing all those elements in an actively growing state.

The case reported here provides an excellent example of this state. All stages are present, from completely formed lymphatics and cysts containing plain muscle-fibres in their walls to actively growing endothelial rods opening out later into channels and nodes consisting of basic reticular structure which are possibly incompletely-formed lymph glands. The ducts running from the neoplasm towards the cœliac region may be an attempt on the part of the tumour to coördinate itself with the normal lymphatic system.

The problem of the origin of cysts in these tumours involves that of the formation of lymph—i.e., whether the endothelial cells actively secrete or passively conduct, or do both. Experimental physiology has failed to show that they do more than act as a filtering membrane of variable permeability,[14] but the pressure against which the cysts are formed is greater than that of the tissue fluids. The intra-abdominal pressure becomes increased, and finally

the muscular wall is stretched. This means that work has been done and fluid formed against increasing tension. In the pathological state, at least, endothelial cells probably secrete.[15]

An accurate analysis of the cyst contents and comparison with normal lymph might help in the elucidation of the problem. Unfortunately, the contents in this case were not analysed, but Grausman and Jaffe [16] state that they contain a high percentage of globulin and albumin, but no mucin.

I am indebted to Mr. Morgan Jones, of the St. Albans and Mid-Herts Hospital, for permission to publish this case; to Lieut.-Colonel W. F. Harvey of the Royal College of Physicians Laboratories, Edinburgh, for help with the microscopical sections; and to Mr. T. Hamilton for the microphotographs.

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ACHLORHYDRIA AND ANÆMIA IN ADVANCING YEARS.

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Since it was demonstrated that the healthy gastric ucous membrane contains some specific substance nich has the property of inciting a remission in rnicious anæmia,[1] further interest has been aroused the relationship of achlorhydria to anæmia. Many vestigators have described the presence of a condary anæmia in association with achlorhydria, d some have recorded encouraging results with liver erapy. Faber,[2] whose work on achlorhydria is well own, has advocated the administration of large doses iron in cases of "essential achylia," and Kohn [3] has o drawn attention to the frequency of blood changes benign achlorhydria. The mechanism of the duction of anæmia, whether primary or secondary, these cases of achlorhydria is still unsolved, but is fairly certain that the achlorhydria is the basic dition and that the primary change is this derangeent in gastric function. A recent paper by Borgbrg and Lottrup [4] deals with the blood picture in a ies of cases showing achlorhydria; they found that per cent. of the patients showed some degree of emia, with the colour-index above 1 in 22 per t. and megalocytosis in 15 per cent. The constancy achlorhydria in pernicious anæmia is such that the ling of hydrochloric acid in the gastric juice either proves the diagnosis to be erroneous or makes the case one of extreme rarity and interest; the converse, however, does not hold. While Hurst [5] has supported the views of Martius [6] that the achlorhydria has a constitutional or congenital origin, Faber [7] and others believe that it results from pathological conditions, suggesting that, as the liver or kidney can be damaged by a blood-borne toxæmia, so can the gastric mucous membrane. Faber points out that febrile states in children often produce an achlorhydria, which may be either transient or long or permanent. If it is correct to regard achlorhydria as an index of a derangement of gastric function resulting from disease, a greater frequency should be expected with advancing years; if this achlorhydria plays any part in the development of anæmia a series of cases in the latter decades of life should show such changes.

To test these views a hundred persons over 60 years of age and in normal health were selected and their response to the ordinary fractional gastric analysis recorded. Their ages varied between 60 and 95; 47 were males and 53 were females. A more detailed account of the cases and our observations on them are to be given elsewhere,[8] but the salient features are here set out. None of the patients had suffered from digestive ill-health. Arterial sclerosis was found in all to a varying degree, and the systolic blood pressure ranged between 120 and 250 mm. of mercury, with no apparent relation to the gastric secretion. The blood was examined in all cases showing achlorhydria, and the results were compared as a series with those of the group showing an abundant secretion of free hydrochloric acid. The condition of the tongue was also noted, whether rough and papillated, or smooth and glazed.

Results of the Investigation.

The 100 cases examined can be divided into the usual four groups in respect to acid secretion:—

	Per cent.
(*a*) Achlorhydria	32
(*b*) Low secretion of hydrochloric acid— Values less than 10 c.cm. N/10 NaOH	12
(*c*) Normal secretion of acid— Values between 10 and 50 c.cm. N/10 NaOH	43
(*d*) High secretion of acid— Values above 50 c.cm. N/10 NaOH	13

The most striking departure from normal is the high frequency of achlorhydria—32 per cent. of all cases. A common finding was a definite delay in gastric secretion during the first one-and-a-half-hour period of the test-meal; this may have been due to psychical inhibition resulting from the analysis, for none of the cases had had such an experience before. Another point noted was the frequency with which unchanged gruel was aspirated in the samples of juice, both in the acid and in the anacid cases.

(*a*) *The Achlorhydria Group.*—Thirty-two patients showed complete absence of hydrochloric acid with the ordinary fractional analysis. Of these, 12 were males and 20 females. In 15 there was some degree of pallor, and in seven the tongue surface was smooth and glazed. In none was there any other abnormality to suggest an ulcerative lesion. A rapid emptying-rate was common in this group, the majority of the stomachs being empty in two hours. Twenty-seven of these cases were submitted to histamine stimulation a few days after the ordinary gastric analysis. An average dose of 0·5 mg. was injected subcutaneously after the withdrawal of the resting juice and samples of juice were aspirated 15 minutes and 30 minutes later. No ill-effects were observed. The subsequent

examination differentiated these cases into two groups :—

1. Achlorhydria with hydrochloric acid secretion after the injection of histamine—*apparent achlorhydria*—13 cases—10 female and 3 male.

2. Achlorhydria persistent after the injection of histamin—*true achlorhydria*—14 cases—7 males and 7 females.

Apparent Achlorhydria.—The height of hydrochloric acid recorded was roughly parallel with the volume of juice secreted. The gastric ferment—pepsin—was also estimated in some of the cases. No parallel relationship was found between the acid secretion and the pepsin content of the secretion; some cases showed a high secretion of pepsin with little hydrochloric acid, and some with a good secretion of acid gave comparatively low pepsin values. The blood counts in this group showed only one case in which the red cell count was below 4 million, while the hæmoglobin was below 60 per cent. in three cases.

True Achlorhydria.—No hydrochloric acid secretion followed the subcutaneous injection of histamine. Four of the cases possessed glazed tongue surfaces and seven showed red cell counts between 3 and 4 million; in four of these the hæmoglobin was 60 per cent. or below. In three cases the blood films showed macrocytes, the large forms being well filled with hæmoglobin and more oval than circular. The estimation of pepsin in this group showed that histamine stimulates the secretion of pepsin as well as of hydrochloric acid and, in this particular group, in the absence of hydrochloric acid. The two cases showing the lowest ferment content also showed red cell counts below 4 million. In no case was pepsin completely absent. A series of 100 persons over the age of 60 need not of necessity, therefore, contain any case of true achylia.

Of the 32 cases showing achlorhydria by the ordinary method of analysis, five were not investigated with histamine for various reasons. In two of these the tongue was smooth, and in two the blood figures showed some deficiency in hæmoglobin.

Group B, showing a normal secretion, and *Group C*, showing a low secretion of hydrochloric acid, furnish no information.

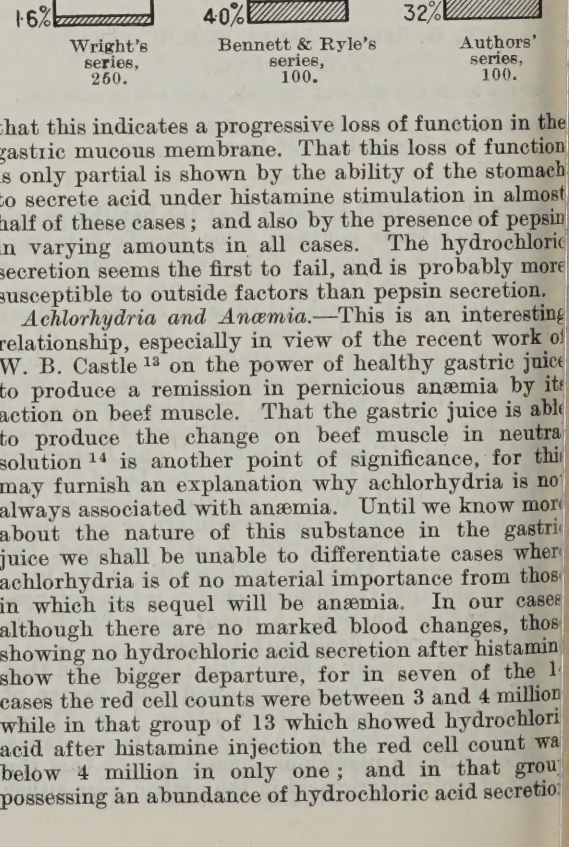
Group D, High Secretion of Hydrochloric Acid.—Thirteen cases belong to this class, showing a hydrochloric acid value of above 50 c.cm. N/10 NaOH at some part of the analysis. All the cases were free of symptoms and in none was the tongue smooth.

Discussion.

Achlorhydria and Carcinoma of the Stomach.—The frequency of achlorhydria in carcinoma of the stomach is undisputed, and it has become an important diagnostic finding in a man with a short history of indigestion. While there is no doubt of the truth of this relationship, its importance as a sign is somewhat lessened in view of our finding: that 32 out of 100 apparently healthy persons over the age of 60 show achlorhydria.

Achlorhydria and Age.—Stimulated by the researches of Faber, many investigators have studied the gastric secretion in infants and children and, despite the great difficulties in obtaining samples of juice, sufficient data have been accumulated to show that, while achlorhydria is common during and after a febrile illness, it is extremely uncommon in healthy children. Perhaps the most significant work in this line is that of Wright,[9] who studied the gastric secretion in 250 children between the ages of 6 and 15 years and found hydrochloric acid in all but four—an incidence of 1·6 per cent. The researches of the workers in the Copenhagen Pædiatric Clinic[10] have also demonstrated the rarity of achlorhydria in children. Hertz, Chievitz, and Andersen's series of 127 healthy children showed no cases without acid secretion. The standard series of 100 healthy students studied by Bennett and Ryle[11] showed four with no free hydrochloric acid secretion. Unfortunately previous work on the gastric secretion in the later decades of life has been conducted on the Ewald method of analysis; as a large number of our cases showed a definite delay in secretion, it is not surprising that Dedichen[12] should have found achlorhydria in 66 cases out of a series of 99 which he examined by the one-hour method. Comparing our results with the work of Wright in childhood and with those of Bennett and Ryle on students, we obtain a striking difference, which is shown diagrammatically in the Figure.

It appears, therefore, that there is an increasing incidence of achlorhydria with advancing years, and



that this indicates a progressive loss of function in the gastric mucous membrane. That this loss of function is only partial is shown by the ability of the stomach to secrete acid under histamine stimulation in almost half of these cases; and also by the presence of pepsin in varying amounts in all cases. The hydrochloric secretion seems the first to fail, and is probably more susceptible to outside factors than pepsin secretion.

Achlorhydria and Anæmia.—This is an interesting relationship, especially in view of the recent work of W. B. Castle[13] on the power of healthy gastric juice to produce a remission in pernicious anæmia by its action on beef muscle. That the gastric juice is able to produce the change on beef muscle in neutral solution[14] is another point of significance, for this may furnish an explanation why achlorhydria is not always associated with anæmia. Until we know more about the nature of this substance in the gastric juice we shall be unable to differentiate cases where achlorhydria is of no material importance from those in which its sequel will be anæmia. In our cases although there are no marked blood changes, those showing no hydrochloric acid secretion after histamine show the bigger departure, for in seven of the 14 cases the red cell counts were between 3 and 4 million while in that group of 13 which showed hydrochloric acid after histamine injection the red cell count was below 4 million in only one; and in that group possessing an abundance of hydrochloric acid secretion

normal blood figures were obtained in all but one case with a red cell count of 4·3 million and a hæmoglobin percentage of 62. In none of the cases could the gastric secretion be termed an achylia, yet two of the true achlorhydria group showing red cell counts below 4 million were poor in pepsin secretion. The reverse was seen in one case which showed no anæmia and yet a small secretion of pepsin. Although the pallor of many of the cases made us anticipate greater departures from normal in the blood picture, it can be concluded that the changes observed occurred more frequently in the group of true achlorhydria than in the other groups. While a relationship between pepsin secretion and anæmia is suggestive, further work is necessary before a conclusive opinion can be expressed. It must be remembered, however, that not only is there an achlorhydria in pernicious anæmia but the condition is a true achylia, and in none of our cases was such an advanced deficiency found. This may account for the indeterminate blood changes we have encountered. It is a matter of conjecture whether, if the cases of true achlorhydria had developed their gastric defect earlier in life, they would have ultimately become cases of frank pernicious anæmia. Their subsequent course may throw light on this problem.

Achlorhydria and Atrophic Changes in the Mucous Membrane of the Tongue.—It is well known that changes in the mucous membrane of the tongue are found in pernicious anæmia and that soreness of the tongue is often one of the symptoms, sometimes the earliest observed by the patient. Atrophic changes are also seen in women in that condition called "dysphagia and anæmia" in which the atrophic changes are continued down the pharynx and œsophagus. Achlorhydria has also been found in this condition in some of the few cases examined.

Of the 68 cases in our series which showed some secretion of acid, a smooth tongue was only found in two, but it was present in seven of the 32 showing achlorhydria. Of the seven cases showing atrophic changes in the tongue four were in the true achlorhydria group, two in the incompletely investigated group of five cases, and one in the apparent achlorhydria group. A smooth tongue is therefore found more often in cases showing a deficient gastric secretion than in cases with a normal secretion; this emphasises the fact that atrophy of the mucous membrane of the tongue and an abnormal or deficient gastric secretion may occur together.

Conclusions.

1. There is a higher incidence of achlorhydria in the later decades of life.

2. The fact that achlorhydria is found in 32 per cent. of healthy persons over 60 minimises its diagnostic value in carcinoma of the stomach.

3. True achlorhydria can be distinguished from apparent achlorhydria by the administration of histamine. The percentage of true achlorhydria is about 15.

4. A slight degree of anæmia is found more frequently in cases showing a true achlorhydria than in those showing a normal acid secretion.

5. Anæmia is more common in cases showing a diminished pepsin secretion than in those showing a good secretion of pepsin.

6. Atrophic changes in the mucous membrane of the tongue are more frequently associated with true achlorhydria than with a normal gastric secretion.

It is with pleasure that we record our thanks to Dr. W. E. Turner, medical superintendent, Park Royal Hospital, for granting us freedom to investigate all the cases herein referred to. We also wish to acknowledge our gratitude to Prof. E. C. Dodds for his encouragement and criticism.

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OBSERVATIONS ON DISSEMINATED SCLEROSIS.

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THE following is a preliminary communication upon 12 cases of disseminated sclerosis with reference to the cultivation of *Spherula insularis* and specific vaccine treatment.

In the interests of 24 long-standing cases at present under treatment at the Manor Hill Red Cross Hospital, Birkenhead, we decided to investigate the cerebro-spinal fluid by the method of cultivation employed by Miss Kathleen Chevassut, as described by her in THE LANCET (1930, i., 552). Our hospital committee, having sanctioned the purchase of the somewhat expensive special equipment necessary, the following procedure was adopted. The results of examination of the cerebro-spinal fluid in all 12 cases is set out in the Table.

*Table giving Results of Examination of Cerebro-spinal Fluid in 12 Cases.**

Ref. No.	Lange gold curve.	Cells.	Globulin.	Total protein (mg.) %.	Ref. No.	Lange gold curve.	Cells.	Globulin.	Total protein (mg. %).
35	5555551100	6	+	140	26	4432220000	8	Trace	95
30	5555430000	8	++	95	25	4433432100	12	++	100
23	5554342000	10	+	95	21	3112210000	6	Trace	80
24	5544432200	12	+	80	31	1533333300	10	+	60
33	5543442100	2	++	200	34	1223321000	2	Trace	60
66	4443222000	4	+	60	22	2222320000	5	Trace	90

* In each case the Wassermann reaction to the C.S.F. and the blood was negative.

It is important to note that these 12 cases had previously received a varying number of courses of intravenous silver salvarsan, and although in four of these the gold curve is now low there still remain pathological changes in the cerebro-spinal fluid of all examined.

Adopting the method of culture as described by Miss Chevassut with equipment similar to that in use by her at the present time, we found that 11 out of 12 cases showed spheres and granules indistinguishable from those seen at the neurological research laboratory at Westminster Hospital when visited

by us. The one case (No. 22) showing no spheres has a low gold curve, and his clinical condition has been stationary for a considerable time. A further confirmation of some of our cultures was made by Miss Chevassut on her visit to our laboratory.

We have so far been able to show that by using Hartley's serum agar pH 7·6 colonies and free spheres, with and without granules, can be seen on the slip preparations, using dark-ground illumination and suitable magnification and that the "growth" of spheres vary in numbers and rapidity of multiplication in the different cases, the media employed being of one preparation. Using Hartley's serum broth pH 7·6 similar spheres and granules have been seen. The macroscopic appearances of the inoculated broth showed in some tubes an opalescence while others remained clear. In two tubes a turbidity was observed, which later settled to the bottom of the tubes. Subcultures on blood-agar and serum broth in all cases have been made to determine whether a non-filter-passing organism was present. All such cultures remained sterile, except in one of our first cases when *Staphylococcus albus* was obtained. In this case the staphylococci were removed from the broth by filtration through a Berkefeld filter, the filtrate showing free spheres which increased in numbers after 48 and 72 hours' incubation. Attempts have been made to stain the spheres present in both cultures, but so far without success. Controls used consist of (*a*) uninoculated media (containing serum) identical with that used for cultivation purposes, and (*b*) the cerebro-spinal fluids from four cases of tabes dorsalis. These fluids were taken at the same time as the fluids from the cases of disseminated sclerosis and dealt with in exactly the same manner. None of the controls showed the presence of the spheres.

In the initial stages of this work many difficulties have been encountered, mainly due to defects in the preliminary apparatus and in avoiding contamination. Since the one case of contaminated cerebro-spinal fluid stricter aseptic precautions have been observed by the operator, dry sterile gloves being worn after the preliminary preparation of the hands, and the patient's skin has been prepared as for a surgical operation.

So far 11 autogenous vaccines have been prepared, and are being administered intravenously. The cerebro-spinal fluid from all cases treated with vaccines will be examined periodically and results published combined with clinical details in each case. It is not to be expected that marked improvement in physical signs will be found in old-standing cases like the foregoing, but the importance of changes in the pathological findings in the cerebro-spinal fluid after treatment by the autogenous vaccines would be obviously great. A further series of cases is being investigated and we hope to include others of recent origin, or cases in which the progress of the disease is not advanced.

Summary of Observations.

The noteworthy features of our observations are: (1) the variation in the rate of growth of the spheres in the fluid and solid media; (2) the characteristic grouping as if in colony formation; (3) the degree of alteration or apparent degeneration of older spheres; (4) the formation of extra-spherular granules in various numbers; (5) the case showing no growth in the C.S.F., and which was stationary from a clinical point of view; (6) the fact that the controls so far investigated show no growth of spheres.

The above observations and the fact that such findings in this limited series are strictly comparable with the original observations published and were not observed in the controls strongly suggest the presence of a living filter-passing virus in the cerebro-spinal fluid of cases of disseminated sclerosis.

We are greatly indebted to Sir James Purves-Stewart, and Miss Chevassut for so freely answering questions as to the apparatus employed in the cultivation of the cerebro-spinal fluid, and the clinical application of what appears to be the specific virus of disseminated sclerosis.

CLINICAL AND LABORATORY NOTES

TREATMENT OF THE SIMPLE GANGLION BY INJECTIONS.

BY PETER MCEVEDY, F.R.C.S. ENG.,
SURGEON TO ANCOATS HOSPITAL, MANCHESTER.

THE simple ganglion is of interest from many points of view. The pathology is not definitely known, but the commonest opinion is that it is formed by cystic degeneration of connective tissue in the region of the joints.

Ganglia predominate in the female sex in the second and third decade, and in those of slight build. They may disappear spontaneously or on giving up a particular form of exercise, such as riding. Three chief methods have been employed in the treatment—namely, subcutaneous rupture, excision, and injections.

THREE METHODS.

(1) *Subcutaneous rupture* is brought about by pressure exerted by the thumb, or much more commonly by a sharp knock with a book. The thick mucinous fluid diffuses into the surrounding tissues and is absorbed in a few days. There is no doubt that a cure may follow, but recurrence is frequent (probably in about 50 per cent. of cases). The traumatic inflammation following this method probably accounts for its superiority over simple aspiration or incising the ganglion with a tenotomy knife.

(2) *Excision* of a ganglion is regarded as a minor operation. This is wrong, and accounts for the recurrences after operation. Careful and complete excision of a ganglion is almost certain to result in a cure. The operation may prove tedious and difficult, one or more tendons may be exposed, and there may be an opening into the joint. Complete hæmostasis and asepsis are necessary, as any infection following the operation might have serious consequences.

(3) The *injection* treatment of ganglia is of long standing. Many substances have been used, but the chief have been iodine and carbolic acid. These substances may cause much pain, and are not free from the danger of subsequent sloughing.

TECHNIQUE OF INJECTION.

During the last year I have treated many ganglia by injections of sodium morrhuate, and the results have been extremely satisfactory. The skin over the ganglion is carefully sterilised. A small quantity of local anæsthetic is injected into the skin at the side of the ganglion with a fine needle. A needle of moderate bore is inserted at this point, and the contents of the ganglion are aspirated. At times the contents are so gelatinous that they can be expressed through the needle only by firm pressure over the ganglion. With the needle still in the

ganglion, 5 per cent. sodium morrhuate is injected. The quantity will vary with the size of the ganglion, from 0·5 to 2·0 c.cm. After the injection the ganglion swells and may reach its former size and tenseness. There is mild pain for a day or two. If the quantity of sodium morrhuate is correctly judged, the ganglion only reaches about half its original size, the pain is slight, and there is no redness. After a few days the ganglion diminishes in size and quickly disappears. If the ganglion is still present at the end of two weeks it is again aspirated and injected, the quantity of sodium morrhuate being increased. If it is thought that the ganglion communicates with a joint the patient is instructed to keep the limb at rest for a few hours following the injection. No joint pains have followed the injections, and there have been no complications.

Recently ten cases have been examined in which treatment has been completed at least four months. The ganglia had disappeared in all but two. In these two a nodule a little bigger than a pea remained, and in both the quantity of sodium morrhuate used had been less than 1 c.cm. In both of these the ganglia had been the size of a walnut, and the quantity injected should have been 1·0 to 1·5 c.cm.

As the symptoms caused by ganglia are not severe, and as the treatment is undertaken partly for cosmetic reasons, operative treatment is only indicated when simpler methods have failed. Treatment by injecting sodium morrhuate offers good prospects of a cure without the danger of complications.

A CASE OF PARAPLEGIA IN HODGKIN'S DISEASE.

BY F. JOHN POYNTON, M.D., F.R.C.P. LOND.,
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AND
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A RAILWAY porter, aged 23, came to the out-patients' department of University College Hospital on May 16th, 1929, for pain in the back and stiffness. There was no deformity. The first examination suggested spinal caries, but no lesion was detected by radiography. A week later he was admitted, and at this time there was weakness with difficulty in walking. On inquiry it was ascertained that he had suffered for five months from intermittent gripping pains in the chest, usually caused by exertion. There were night sweats. For two months there had been dull aching pains across the back and shoulders. For two weeks tender lumps had developed on the scalp, and with these headache. There had been a history of enlarged glands in the neck three years before, and a year previously he had injured his back in a fall.

On admission the physical signs were as follows. There were some large lymphatic glands on both sides of the neck and a few in the left axilla. Two hard tender swellings were present on the skull, one over the right side of the forehead and one over the right temporo-parietal region. There was a partial paraplegia from the level of the tenth dorsal vertebra. Nothing abnormal was found in the heart, lungs, or abdomen. The temperature was 103° F., the pulse-rate 116, and the respirations 22 to the minute. A slight general pallor was present. The blood showed a secondary anæmia. The Wassermann reaction, both of the blood and spinal fluid, was negative. The urine was normal. Radiography proved of no assistance.

The *illness* ran a prolonged course with swinging fever, ranging 98·4° F. in the morning and 102° F. in the evening. Novarsenobillon on two occasions appeared to lower the temperature, but had no real influence over the course of the illness. More masses appeared on the skull and one on the sternum, but toward the end of life they diminished much in size and practically disappeared. The paraplegia extended upward and became complete to the level of the fourth dorsal segment, but with only a slight tendency to retention of urine until the end, when complete incontinence supervened. The patient died on Sept. 28th, 1929.

Necropsy showed a purplish-grey mass infiltrating the dura mater for 4 cm. in the region between D.2 and D.4; this pressed on the cord. Microscopy showed it to be lymphadenomatous in structure. Small lymphadenomatous deposits were present in the liver and spleen, one in each, about 1 cm. in diameter. The lymphatic glands at the hilum of each lung and along the posterior abdominal wall were enlarged and lymphadenomatous. The lungs showed patches of broncho-pneumonia, and lymphadenomatous cells were found in the consolidated areas.

The occurrence of paraplegia in cases of Hodgkin's disease as a result of a lymphogranulomatous infiltration of the structures around the spinal cord was pointed out by Parkes Weber in this country in 1923 and subsequently.[1 2 3] He collected notes on 20 cases of Hodgkin's disease and of leukæmia with spinal cord symptoms; of these, there were five definite and nine probable examples of the condition in the former disease. Eugénis,[4] in 1929, collected the recorded cases, 60 in all, classifying them into cerebral and spinal groups, of which the latter were the more frequent; many of these cases had already been gathered together and summarised by Parkes Weber. He described one case of granulomatous pachymeningitis, which he had personally observed, occurring in a patient suffering from Hodgkin's disease. Schaeffer and Horowitz,[5] writing in the *Presse Médicale* this year, also reviewed the subject, not having seen Eugénis's thesis; they described in detail two additional cases. The bibliography of the subject was fully reviewed by all these writers.

The tumours on the skull and chest seen in the patient described above were interesting. They decreased in size during the course of the disease, and had disappeared some weeks before death. It is unfortunate that no trace of these swellings was found at necropsy, since it would have been interesting to have known their exact pathological structure. Eugénis directed attention in his thesis to local osseous lesions as a possible source of cerebral symptoms in lymphogranulomatosis maligna. Poynton and Moncrieff [6] described the presence of nodules in the scalp in two fatal cases of glandular enlargement in childhood; these, however, were subcutaneous and not osseous. Thursfield [7] has reported a similar case, in which the subcutaneous nodules varied in size from time to time. It may be that there is, however, some connexion between these various nodules that occur in a large and somewhat vague group of diseases characterised by fever and glandular enlargement.

The interesting features in this case were: (1) the presence of paraplegia as a complication of lymphogranulomatosis maligna; (2) the lumps on the skull and chest; and (3) the scarcity of other gross lesions, both clinically and pathologically.

We are indebted to Dr. Parkes Weber for referring us to the articles by the French writers.

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MEDICAL SOCIETIES

ROYAL SOCIETY OF TROPICAL MEDICINE.

AT a meeting of this Society held on Oct. 16th, with Dr. G. CARMICHAEL LOW in the chair, Dr. FRANK MARSH spoke on the Ætiology of

Heat Stroke and Sun Traumatism.

Dr. Marsh, who is pathologist to the Anglo-Persian Oil Company, said that though a temperature of 109° to 112° F. in man had been recorded in cases of fever and heat stroke with subsequent recovery, its duration was never long; Halliburton and Mott had demonstrated that a temperature of 108° if long continued coagulates the globulin of the nerve cells of the brain, and the after-effects most commonly observed in cases of recovery from heat stroke were attributable to some lesion of the parenchymatous tissue of the brain. Heat loss in the human subject was regulated by sweating, and the efficiency of the mechanism depended on the humidity of the environmental air, the concentration of sweat glands per unit surface, and their degree of activity. In man, complete saturation with water vapour of the surrounding air at 90° caused an uncontrollable rise of body temperature; when the air was in motion, high degrees of humidity, provided they fell short of saturation, could be borne with impunity. Haldane in the course of prolonged sweating had described fatigue of the sweat glands, and there was some evidence that this was due to a low concentration of salt in the blood, or to the reduction of blood volume by loss of fluid. The relation of activity of sweating to the varying concentration of salt in the blood did not appear to be known. Europeans living in the Persian Gulf littoral had to sweat continuously; urine might be passed only about once a day, and usurpation of kidney function by the sweat glands might perhaps occur. Symptoms following prolonged exposure to sunlight must depend on either dark and luminous heat, or ultra-violet light, or the combined visible and invisible spectrum of the sun. Illness due to heat alone was common among miners and stokers, with the appearance of such conditions as heat exhaustion, heat cramps, and heat hyperpyrexia. Illness following exposure to the sun might stimulate these conditions, but recent medical text-books described, in addition, states known as sun traumatism, sunstroke, solarism and solariasis, and ascribed them to the rays of the blue-violet end of the spectrum. Certainly animals with hæmatoporphyrin in the circulating blood could be rendered comatose by exposure to ultra-violet light, and Manson-Bahr ascribed sun traumatism to the actinic rays; Willcox asserted that there was no evidence that rays other than heat rays were a factor in the production of sunstroke, but he seemed to be alone in this opinion.

EXPERIMENTAL PRODUCTION OF HEAT STROKE.

During the summer of 1929 Dr. Marsh had made a series of experiments with rabbits to decide the factors principally involved in the production of heat stroke. The rabbits were either exposed completely to the sun for varying periods, or their shaved heads alone were exposed, their bodies being cooled in a special box with an ice jacket. For an animal unprovided with sweat glands and relying for heat loss on vaporisation of water in its expired air, the rabbit was found to be capable of developing a high resistance to heat. The shaded albino rabbit could withstand air temperatures up to 115°; at 116° resistance broke down. In the direct rays of the sun a temperature of 148° could be tolerated, provided the coincident shade temperature was not over 90°; resistance broke down at a sun temperature of 161°, with a shade temperature of 106°. Black rabbits, however, proved unable to resist a sun temperature of 146·5°, the shade temperature being 84°.

It was interesting to compare the effects of a high environmental temperature on animals at different levels of the biological scale; the frog suffered from heat stroke at a temperature of 104°; the guinea-pig began to succumb when the shade temperature reached 110°, the rabbit at 116°, and man at about 130°. The nervous system of the rabbit resisted a temperature of 109° for one and a quarter hours; the temperature of collapse varied slightly in different rabbits, but in 11 experiments it equalled or exceeded 110°. A high mortality occurred among the rabbits which developed heat stroke, probably owing to the fact that the temperature at which a rabbit collapsed was near its lethal temperature. Man usually collapsed when his temperature was 104° or 105°, and the lethal level was probably about 110°, so that treatment quickly instituted was to some extent prophylactic. In the rabbit even rapidly applied and effective treatment could never be prophylactic, but only reparative. Experimental heat hyperpyrexia observed in rabbits closely simulated heat stroke in man; post-mortem examination of the animals which died revealed nothing beyond extreme congestion of all the organs including the brain; in two cases multiple petechial hæmorrhages were found in the intercostal and accessory muscles of respiration, and the skin of the ears and back. Pulse and respiration were rapid until a few moments before collapse, when both slowed down; at the time of collapse cyanosis was always present.

Twenty-eight experiments were performed on rabbits wholly exposed to the sun. In each experiment two albino and two black rabbits were used, one of each colour being kept damp by repeated spraying with water. Among seven albino and five black rabbits which were exposed damp no heat stroke developed and no marked rise of temperature was found, except in one black rabbit whose fur was accidentally allowed to dry. Of the dry rabbits seven albinos died of heat stroke and two survived; six dry black rabbits all succumbed.

It was clear from these experiments, Dr. Marsh said, that heat alone was responsible for the condition of heat stroke. Mere wetting could not affect the penetrative state of the rabbits' fur by sun rays; it was inconceivable that anything more than coolness could result from wet fur. Moreover, although the melanin of the black rabbits' fur and skin was impenetrable by green and ultra-violet rays, these animals suffered more severely, and were killed by heat hyperpyrexia at a lower sun temperature than albinos, and at a time of year when the ultra-violet element of the sunshine was relatively weak. As for the damp albinos, they had been utterly unprotected from ultra-violet light, and with rabbits of either colour it was found that bright sunlight and

sun obscured by cloud and smoke caused heat stroke equally well. The evidence was strongly against ultra-violet rays having any influence on the production of heat hyperpyrexia or sun traumatism.

Following prolonged exposure of the shaven heads of seven albino rabbits to sunshine while their bodies were kept cool, two were killed within 48 hours and their brains examined; there were no changes in the nerve cells, and no signs of capillary thrombosis were discovered. It was found that it was impossible to injure rabbits by exposing their heads to the sun provided their bodies were kept cool. On the other hand, an albino rabbit with its head kept cool in the box and its body exposed to the sun died after half an hour's exposure. Dr. Marsh concluded that the rays of the sun had no direct action on the brain tissue of an exposed rabbit; whether it could be assumed that these results applied also to man he was uncertain.

A HUMAN CASE.

The experiments of Hall and Wakefield on heat stroke produced artificially in dogs showed that both the lactic acid and urea in the blood increased after exposure, while the non-protein nitrogen showed a commensurate change with the blood-urea. In the Persian experiments, determinations of the blood lactic acid were performed on four animals immediately after their collapse; values of 63·4, 279·9, 182·7, and 141·6 mg. of lactic acid per 100 c.cm. of blood were found. The plasma carbon dioxide, estimated in one hyperpyrexial rabbit, had given a value of 12 c.cm. per 100 c.cm. of blood. A high blood lactic acid and a low plasma carbon dioxide content appeared to be fairly constant findings in heat stroke. In one human case studied during the summer, the patient had been a member of the Persian guard who had given a history of feeling unwell for five days; on admission to hospital he had headache, abdominal pain, constipation, and weakness. His temperature was 104° and later in the day went up to 109·6°; repeated cold sponging had kept his temperature in the region of 102° for two days, but on the third day it rose to 108·5° in the rectum, and the patient was removed to a heat stroke ward. Blood analysis had shown lactic acid 100 mg., urea 84·7 mg., sugar 80 mg., and chlorides 436·7 mg. per 100 c.cm. of blood; some agglutination occurred with *B. paratyphosus* B. The patient died on the third day after admission with a temperature of 102·8°. Only 500 c.cm. of urine were passed from the morning of the second day in hospital to the time of death; earlier examination had shown the total chlorides to be 30 mg. per 100 c.cm. and the urea 2 g. per 100 c.cm. In the later stages no chlorides were present. It was conceivable, however, that this was not an uncomplicated case of heat hyperpyrexia, as the positive Widal reaction made it impossible to exclude typhoid fever. Dr. Marsh was convinced that, as sweat glands can apparently excrete only salt water, and not water alone, some level must exist at which the blood concentration of chloride was at its absolute minimum consistent with life, and that at that level some mechanism must exist which stopped the activity of the sweat glands. Certainly in the case under review with a blood chloride of 436·7 mg., and no urinary chloride, the patient was unable to sweat, in spite of large quantities of salt given by mouth.

In conclusion, Dr. Marsh said that his experiments indicated that the host of diseases with varied symptomatology ascribed to the effect of the sun should be replaced by one disease for which he suggested the name "hyperpyrexia due to heat." The essential phenomena of this condition were independent of alteration of the salt concentration of the body, since they occurred in the non-sweating rabbit and dog. There was no reparative treatment, and prophylactic treatment alone appeared to be effective.

Discussion.

Sir CHARLES MARTIN said that he agreed that ultra-violet light had nothing to do with sunstroke; the incidence of sunstroke on high mountains, where there was much ultra-violet light in the spectrum, was small. He was not sure, however, that sunstroke might not exist as a separate entity, apart from heat stroke. Using rabbits in Egypt he had found a difference of 2·5° between the superficial and deep parts of the brain after exposure to sunlight. The contribution of sunlight to the thermal balance sheet of the individual must be considerable. Sweating could be increased with practice; in early sweating the sodium chloride content was low, but as the glands tired the concentration of salt increased.

Sir WILLIAM WILLCOX said that Dr. Marsh's experiments confirmed his clinical observations. But heat stroke arose not merely as a result of the cessation of sweating, but from an autointoxication. He mentioned the case of Sir Victor Horsley, in whom in spite of treatment repeated attacks of hyperpyrexia arose as a result of heat stroke, indicating a profound change in the body mechanism. Some cases ran a temperature like a typhoid patient for weeks; usually the knee-jerk disappeared in the early stages and might take some weeks to return. He would like to know whether the blood and urinary creatinin rose. He described a gastric type of heat stroke which was often fatal, and which he preferred to treat with colon washes and large doses of alkali to combat the toxæmia.

Prof. M. F. PEMBREY said that the War Office had reached the same conclusions as the experimentalists from experience with living men. He disagreed with the theory of a toxæmia, and thought the condition depended on a disturbance of the salt balance; any disorder, such as paratyphoid, helped to upset this balance and to make the patient more liable to heat stroke. Salt should be given as a routine part of the treatment.

Dr. ALDO CASTELLANI agreed that ultra-violet light played no part in the production of heat stroke; in some cases heat stroke was indirectly responsible for intestinal disturbances, and in a few might cause the lighting up of an infection in a carrier—paratyphoid for example. In practice it was useful to separate heat stroke and heat exhaustion, as the treatment was different: in heat stroke the patient required to be cooled by suitable methods, but in exhaustion the appropriate treatment was stimulation, both by substances given by mouth and by injections of such drugs as camphor and strophanthin.

Sir FRANK CONNOR said that as a surgeon he had been struck by the number of ill persons who were attacked. Referring to the difference between black and white rabbits, he said that it was interesting to see how the same principle failed to apply throughout nature; in India the black cows seemed to suffer no more than the white. Residents in the East learned to sweat more easily, and the gift persisted even after their return to England.

Wing-Commander H. E. WHITTINGHAM said that among more than 20 cases occurring in members of the Royal Air Force in Iraq, many had been of the choleraic type; in two patients evidences of malignant tertian malaria were found, and another gave a positive Widal for paratyphoid B. Treatment by

intravenous sodium bicarbonate and glucose had been found to be valuable.

Dr. A. EIDENOW said that in recent experiments with Sir Leonard Hill he had found that animals could be killed by light alone. He doubted whether Dr. Marsh's experiments, except those in which the heads of the animals were shaved, had much to do with the visible spectrum, and he would be interested to know what results would be found if they were repeated under conditions which excluded the infra-red rays. In his experiments with Prof. Hill it had been found that, in animals which had been killed by light, areas of necrosis in the gut were present on post-mortem examination, there was distension of the stomach, and patches of pneumonia in the lung. With ultra-violet light a radiation toxæmia, apart from heat stroke, had been found. Identical pathological pictures had been produced with the β radiations of radium. Apart from any heating effect it had been thoroughly demonstrated that animals could die of a pure light stroke, by means of intense irradiation, carefully controlled, for several hours.

Sir T. CAREY EVANS mentioned a large number of cases of heat stroke occurring on a troopship in the Red Sea, where none of the patients had been exposed to direct sunlight. The heat balancing centre was easily upset by alcohol, and the high incidence of death from heat stroke among sergeant-majors in Lucknow was due to their custom of taking a bottle of beer to bed with them on hot nights.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

THE annual general meeting on Oct. 17th opened with an address from the new President, Dr. HAROLD KERR, medical officer of health for Newcastle-upon-Tyne and professor of hygiene in the University of Durham, on the

Future of Municipal Hospitals.

Great dissatisfaction with the arrangements under the old poor-law had existed, Prof. Kerr said, and ten years ago Bradford had given a lead to the country by transferring its poor-law hospitals, to the local authority. Its example had been followed by Willesden and Aberdeen, and had in time led to the Local Government Act of 1929. The divorce of health services in that Act from consideration of the financial position of the beneficiary was undoubtedly due to the pioneer work of Dr. John Buchan at Bradford. By this Act local authorities had become possessed of considerable hospital accommodation, and upon medical officers of health rested the first charge of advising authorities wisely.

Poor-law hospitals had in the past served the destitute classes only. No matter how long the waiting-list at other hospitals, there had been no coöperation. Some guardians had tried to popularise their hospitals, but the poor-law stigma hung over the municipal hospital, and the general public fought shy of it. Long before the Act had come into force the Newcastle authority had declared that its policy was to depauperise sickness and relegate all functions connected with health to the health committee. It had formed a joint committee of members of the health committee and representatives of the local voluntary hospitals. This committee had been a real step forward in the coördination of hospital services and in bringing about closer mutual understanding. Much work had been done privately before each meeting so that little time was wasted on explanations, and each member knew beforehand the pros and cons of the matters to be discussed. The committee fully endorsed the declared policy of the local authority that the hospitals should be administered in such a way as to provide for the best possible results for the people of Newcastle as a whole.

One large new block of the poor-law hospital, containing modern annexes, operating theatres, and electro-therapy plant, had been established as a first-line hospital, staffed like the best type of voluntary hospital, for acute medical and surgical cases. Its purpose was to supplement and ease the pressure on the Royal Victoria Infirmary. This part contained about 150 beds. The rest of the hospital, over 500 beds, was to be occupied by less acute cases. Patients with pulmonary tuberculosis were transferred to the municipal sanatorium and hospital for advanced cases, midwifery cases to the voluntary maternity hospital and Royal Victoria Infirmary, and mental defectives to the appropriate institution. Transfers to other hospitals involved, of course, some financial arrangement. The only out-patients to be seen at the municipal hospital were discharged cases, as there was an adequate supply of general and special departments elsewhere in the city.

STAFFING THE HOSPITAL.

The ex-guardians had favoured whole-time appointments but had not been prepared to pay salaries that would attract good men, although strongly in sympathy with the desire to put the hospital in the very front rank of efficiency. They had, however, been persuaded. For the acute block a part-time visiting staff on the clinic system had been appointed. A senior physician and surgeon, as directors, received £300; one assistant physician and two assistant surgeons received £500 each; one medical and two surgical registrars, £250 each; a part-time radiologist £300, and residents £100 each. There had been no lack of applications, and the hospital had been fortunate in procuring as directors two recently retired members of the staff of the Royal Victoria Infirmary. Both were on the teaching staff of the medical school, a fact which would facilitate the use of the municipal hospital in medical education. The mere presence of the medical student—that most critical of all onlookers—was a great stimulus to the work of the hospital staff.

The original medical superintendent and his deputy would continue at their former salary of about £1200 and £600 respectively, but the assistants would be replaced by a senior medical officer at £300–£500 and two house surgeons and two house physicians at £100 each. The medical superintendent would remain in complete administrative control, but was relieved of clinical work except the certification of lunatics—a subject on which he was expert. His deputy was specially qualified as a surgeon, and would continue to act as such for the larger block of the hospital. Formerly there had been two consulting surgeons and a consulting physician receiving £100 each, and an ear, nose, and throat and ophthalmic surgeon receiving £25 each. These appointments were to be terminated, but the two last would probably be renewed. Efficient laboratory facilities had been provided. Recommendations for appointments would be made by a small committee consisting of three representatives of the College of Medicine, one of the local division of the British Medical Association, and one of the staff of the Royal Victoria Infirmary. The medical officer of health or his deputy attended all meetings of this

committee by request. The actual appointment would then be made by the health committee. The nursing staff would also require enlargement, and an almoner service would be provided.

To avoid the interposition of the relieving officer, admission was to be by direct communication between the private doctor and the medical superintendent. The relieving officer would only make inquiries where payment could not be undertaken by definite agreement and partly in advance. Ultimately the assessment of means was to be referred to the city treasurer, instead of the relieving officer. In time it was proposed to set up a sort of clearing-house to allocate the patient to the appropriate institution, thus serving all the local hospitals.

A gradually increasing admission-rate was anticipated, especially from respectable independent middle- and working-class people who could not afford a nursing-home and did not like charity. It must not, however, be forgotten that the hospital's first responsibility was the care of the indigent sick. To meet the increase of patients it was proposed gradually to transfer workhouse inmates to cottage homes, almshouses, and employment centres, so that the health committee had the entire establishment for those needing medical care.

Voluntary contributions to the hospitals were almost bound to diminish, and there was strong reason for the establishment of contributory schemes to enable the voluntary hospitals to continue their valuable work. Newcastle hoped to establish a central record office where all assistance given from public or voluntary sources should be noted, in order to keep a check upon abuse, reduplication, and overlapping.

Such, said Prof. Kerr, was the arrangement in Newcastle; in country areas the transfer might be a lower and more difficult business, necessitating reclassification and remodelling of institutions and the appointment of local practitioners to the visiting staff. Upon the rearrangement of local authority areas would depend much of the efficiency of the less populous parts of county districts. If each was entred upon a fair-sized town it would be much easier to arrange an effective hospital service. The potentialities for usefulness of the new municipal hospital were without limit both in the treatment and in the investigation of disease.

THE MUNICIPAL HOSPITALS OF LONDON.

Dr. W. BRANDER paid a tribute to the work of boards of guardians possessed of very limited powers. The complexities of the London hospital service made the work there peculiar and difficult. The organisation most suitable in London might not be the best for any other locality. There were 29 hospitals containing over 16,000 beds, 14 other institutions with 11,500 beds, and 34 special hospitals with 1500 beds transferred from the Metropolitan Asylums Board. The Council also controlled 20 mental hospitals, housing over 1,000 patients. There was, however, very little surplus accommodation. On the whole the poor-law institutions were well-built, well-equipped, and well-staffed, but the Council was concentrating as a primary measure on the defects. They wished every hospital to be supplied with an adequate laboratory and radiological and electrotherapeutic department, and certain group-laboratories would undertake more specialised work for an area. Out-patient attendance was to be limited to casualties, after-care of surgical cases, consultations, and antenatal patients. There was a gross deficiency of convalescent homes, which was to be remedied. The Mental Treatment Act would create a new public health service, and the Council was most anxious to centralise the work. Consultant staffs were to be attached to all institutions, and undergraduate and post-graduate education encouraged. The respectable poor needed municipal hospitals without charity, and should be catered for. Coöperation with voluntary hospitals might help to relieve the long waiting-lists of these institutions.

Dr. J. J. BUCHAN expressed his general agreement with Prof. Kerr's remarks. The indigent sick did not mean the penniless sick but the needy sick, those who could not afford institutional accommodation for themselves, and it was the duty of local authorities to provide for all these. The voluntary hospitals could not in the future, as in the past, hold themselves out as charitable providers of that which it was the duty of the local authorities to ensure. In the course of time the public would realise this duty. The voluntary hospitals had set a marvellous example for county borough councils and county councils to follow; they had failed only in raising enough money to maintain their service. The municipality of Bradford had made a contributory contract with its inhabitants, guaranteeing beds to contributors when they fell ill. The voluntary hospitals' contributory schemes gave no guarantee.

In reply to questions the PRESIDENT said that the aged infirm remained for the present under the public assistance committee, but were to be taken over by the public health committee as soon as possible. The medical officer of the public health committee automatically became medical officer to the public assistance committee's institution. Clinics should be in the municipal hospital. He agreed that in small boroughs, where there might be no accepted consultants, the medical superintendent ought to be a specialist in some line.

HUNTERIAN SOCIETY.

AT the inaugural meeting of this Society, held on Oct. 20th at Simpson's Restaurant, Cheapside, Prof. A. W. SHEEN delivered his presidential address, entitled

The School of Health.

Prof. Sheen took as his text a remark made by John Hunter in a letter to Jenner in 1775: "Why think? Why not try the experiment?" The theme of his address was that a new institution should be founded in this country, which should be named the School of Health. The main objects of the school would be to demonstrate measures for the promotion of fitness (using the word in the eugenic rather than in the athletic sense) and for the prevention of disease. It was necessary to determine what was meant by the terms "health" and "disease." There was no such thing as real health. Apart from antenatal defects, from the moment of birth the individual had to maintain a precarious balance between toxins and antitoxins, and such health as fell to human lot was a sort of optimum condition and varied with every individual. What was far more important than disease was disorder, which was wrong structure or wrong functioning, and it was to disorder and its prevention that he dedicated his imaginary school. The present attitude towards medicine on the part of the public was, broadly speaking, a demand for

curative medicine. The problems of preventive medicine did not directly concern the general practitioner, whose primary object was the treatment of disease. Could these circumstances be altered, so that every doctor became, in the broadest sense of the word, a medical officer of health, not of healing? Prof. Sheen went on to draw a picture of the large extent of unfitness and disorder prevailing in the community. At the present moment we zealously cherished the unfit, taking few or no steps to prevent their propagation. The children of defectives were also preserved in the general lowering of infant mortality. There was an enormous increase at the present time in the numbers of those receiving poor-law relief, in itself an index of unfitness. Very little reading of eugenic literature made it evident that unfitness was increasing, and was alarmingly prevalent. He referred to the report of the late Sir James Galloway to the Ministry of National Service in 1920, which was based on the complete assessment of men of military age, and showed that 67 per cent. of these suffered from different grades of unfitness. With regard to mental deficiency, he noted from a Treasury report that twice as much money was expended under this head in 1928 as in 1921. It was unfortunate that the National Health Insurance records had never been utilised to show the prevailing morbidity. An analysis of the records would be, of course, a very costly matter, but one fact stood out—namely, that during recent years there had been an enormous increase of sickness claims under the National Health Insurance Acts. He believed this increase to be a real one. With regard to the cost of invalidity, he described some calculations he had made which brought out the result that in one way or another this nation was spending £300,000,000 a year on health measures.

Turning to describe his proposed school of health, Prof. Sheen said that it would be a voluntary institution, under its own constituted authority, and free from other control. He wanted it to take the foremost part in the reshaping of public opinion and the creation of what might be called a national health conscience by the evidence of its work. He visualised the school situated in some great health park on the sunny uplands of Hampshire or Sussex. In design the buildings would be perfect of their kind, but of the plainest and cheapest type, for the housing requirements of scientific work were constantly changing. All that was wanted was easy expansion and internal convertibility. All the work would be designed for education in and the furtherance of the common health. He thought that even a sum of ten millions could not be regarded as excessive for the provision and endowment of such a school, in view of the savings which such a school, when successful, would effect. If such a school ever came into being, in due course money would come to it from its work. With regard to the staff of the school, these would be selected eugenically, and would be largely full-time people, not only medical men, but a host of others—geneticists, eugenists, sociologists, anthropologists, agriculturists, chemists, physicists, geologists, engineers, lawyers, experts in child study, and in education—in fact, all who could work for human welfare in their special provinces. Consultant experts would be called in from outside.

THE FUNCTIONS OF THE SCHOOL.

With regard to the work of the school, he indicated certain lines on which it might proceed. One of these was with regard to eugenic marriage. The most important thing for the human race was to be born well, but while he found that there was a general acceptance of the fact that the application of biological principles with due regard to social factors would result in human betterment, yet, when improvement of racial conditions on these lines was indicated, there was a general throwing up of hands. Dean Inge had rightly said that the methods of the stud farm could not be applied to human beings, and that the only recourse was to proceed by way of the education of the individual. But he would suggest that one of the departments of his school might have the aim of furthering eugenic marriage. He believed that the majority of human beings did desire healthy partnerships and fit children, and that there would be some who would be willing to accept advice on a proposed marriage from some who could speak with authority, and that others would come to such authority to be guided to a mate. The furtherance of eugenic mating might be a very useful function of his school.

Another function of the school would be to receive expectant mothers, prepare them for birth, and give them the necessary education in infant care and welfare. Child life and education would be responsible for many of the activities of the school. He felt that education and health measures could not be dissociated, and for his part he would welcome in this country a complete merging of the Ministries of Health and Education. He also strongly maintained that education could be directed to vocation without losing any of its influence on character. His university friends scoffed at what they called "job factories," and talked about the peculiar discipline and breadth which resulted from an undirected education. But for his part he felt that education could be directed according to the aptitudes of the individual, and that the universities had not been wise in their obliviousness to vocational training. He further visualised in his school what he called a health village—a colony of hygienic dwellings, some of the people being employed in healthy industries developed in the school. All kinds of observations and experiments would be made. Special investigations would be made on selected groups. The school would contain a health clinic, and, indeed, there was now a tendency to develop in connexion with ordinary hospitals, not only clinics for disease, but clinics for health.

A NEW KIND OF HOSPITAL.

With regard to curative medicine, he wanted to associate with the school a hospital of quite a new kind, to conceive it only as one of the many departments of the school. In selecting patients—or, as he preferred to call them, subjects—preference would be given to those suffering from the early stages of disease—in other words, those who were the out-patients of an ordinary hospital would be the in-patients at this school. The hospital would be a research hospital, and the primary question asked with regard to every subject suffering from any illness would be, not "What is it and what shall I do?" but "Why is it, and how can it be prevented?" A psychiatric clinic, a clinic to study the foci of disease, a "surgery to prevent surgery," to use a phrase of Lord Moynihan's, were all examples of the hospital's work.

With regard to general health work in the school, the subjects for study would include environmental conditions, population and distribution, the lay-out of estates, urban and rural conditions, the effect of clothing, climate and air, sanitary services, food

drink, and drugs, occupational and recreational activities, psychology and hygiene, health legislation, and the basic sciences. The school would be a kind of health clearing-house, where health information from every source would be received, sifted, and proved out. It would include a great library, and the members of its staff would travel far and wide to give advice and to receive information. The school would receive students, all of whom would be selected, none being able to claim admission, and some would pay, some would pay nothing, and others would be paid. The students at first would be post-graduates, but later he hoped to see ordinary medical students received. The main endeavour would be to produce a medical officer of health in the widest possible sense of the term. Medical education in this school would be directed to vocation as early as possible. It would include the study of human biology, environmental and nutritional effects, and with this would go embryology, and a study of the results of developmental failure. The study of structure and function would never be divorced, because the one was a meaningless mess without the other. He briefly sketched a proposed curriculum, and said that the student in the school would be trained in the promotion of fitness and preventive medicine in the widest sense. Prof. Sheen concluded by saying that what he was asking for was that something might be done, some example be given of the action that could be taken to stop the physical and mental degeneracy of the race. He claimed for his suggestions that they were constructive, and offered something for health benefit in the hope that the example would incite to more.

A vote of thanks was accorded to Prof. Sheen on the motion of Sir W. ARBUTHNOT LANE, who said that, within its limits, the New Health Society had been doing what Prof. Sheen had visualised, and was seconded by Dr. LANGDON BROWN.

SHEFFIELD MEDICO-CHIRURGICAL SOCIETY.

AT the opening meeting on Oct. 8th the President, Prof. GRAHAM SIMPSON, delivered his inaugural address entitled

SANCTA SIMPLICITAS.

It was related, he said, of John Hus that when being led out to the stake, and noticing in the procession an old lady bowed down by a large fagot, he expressed neither surprise nor resentment, but exclaimed: "O, sancta simplicitas!" Nearly all progress, he continued, consisted in applying this holy simplicity to the problems of life. Experience in examining had taught him that one of the defects in modern medical education was the flooding of the student's mind with the details of innumerable diseases when his groundwork of anatomy and embryology was insufficient. From a medical point of view, the first 30 years of this century might be named "the age of the scopes or the era of extended vision"; simplification had been brought about by the use in diagnosis of the œsophagoscope, bronchoscope, and cystoscope. The discovery and ever-extending use of X rays were, he thought, another example of such simplification. The same principle, moreover, held good in the domain of treatment; 50 years hence our successors in surgery might look on much of the elaborate ceremonial of the operating theatre as mere ritual, and smile, as we do, at the era of the carbolic spray. In fractures the simplicity he had in mind was attained only in the treatment by acute flexion of those occurring near joints; all that was needed was an anæsthetic, some wool, a bandage, the X rays, and some common sense. Prof. Simpson concluded his address by applying the principle to some of the problems of ordinary life.

REVIEWS AND NOTICES OF BOOKS

The Chest Roentgenologically Examined.

Annals of Roentgenology. Vol. XI. By L. R. SANTE, M.D., F.A.C.P., F.A.C.R. New York: P. B. Hoeber. 1930. Pp. 561. $20.

A BOOK in English on the radiology of the chest has been long overdue, no comprehensive work having appeared since that of Wessler and Jaches' volume published in 1923, and now out of print. In this latest addition to the Annals of Roentgenology Dr. Sante has produced a masterly compilation.

His arrangement of the subject matter into three parts is original. Part I. deals with the essential preliminaries to interpretation, Part II. with the evidences of disease as it affects lung structure, thereby narrowing down the field of possibilities, and Part III. gives a detailed description of each disease, from early to late manifestations, including the differential diagnosis. Some 400 excellent radiograms and line drawings illustrate the volume, but these are arranged in the reverse order to that obtaining in other works of this nature; for though the radiograms were obviously taken with the patient facing the radiographer, the shadow of the heart appears on the left side of the picture. This is a little disconcerting to those unfamiliar with radiographic interpretation, but, apart from this, the radiograms are very clear, having lost little in reproduction. In view of the demand for the 2-metre distance throughout Europe, it is noteworthy that the author uses a 4-feet anticathode-film distance.

The author considers that radiological examinations are best made by judicious combination of both film and screen methods, but he goes on to state that "fluoroscopy should not be performed as a routine under any circumstances, since such exposure of the operator is unjustifiable and unnecessary." These views are not universal, the best authorities in Europe recommending routine screening in all cases. No reference is made to fluoroscopy in the lordotic position which is so useful in detecting small interlobar effusions. Lipiodol technique is given in detail, with many illustrations. The author apparently favours the supraglottic route, reserving the intercricothyroid method for children, but he makes no particular reference to the value of lipiodol in demonstrating blocked bronchus in bronchogenic carcinoma, either in the text or by radiograms. On stereoscopy the author is not an enthusiast, for him views in the anterior and lateral planes sufficing. He considers that great skill can be acquired in interpreting flat films. His opinions are the more interesting in view of the recent sojourn in America of English physicians, some of whom returned to their own country full of enthusiasm for this special method.

The various pulmonary diseases are described in detail, and of special interest is the section on acute diseases, especially the pneumonias. The radiological examination of patients suffering from pneumonia is not very frequently undertaken in this country,

but the author appears to have made a special study of these diseases, even including radiograms, which, according to him, are typical of epidemic influenzal pneumonia and the pneumonia peculiar to Friedländer's bacillus. Pneumonoconiosis, including silicosis, receives full attention, though no special reference is made to the findings in asbestosis. The various manifestations of pulmonary tuberculosis, both in childhood and adult life, are fully described and admirably illustrated. Intrathoracic malignant disease receives full consideration. The author appears to consider sarcoma of the lung as a definite entity, but rare. He scarcely mentions benign tumours and gives no radiograms illustrating the value of diagnostic collapse. No reference is made to dermoid cyst and scant notice is taken of hydatid cyst of the lung. The section on massive idiopathic atelectasis is excellent and profusely illustrated. The author gives no explanation as to the mechanism of its production, but offers an ingenious method of treatment.

The book is largely clinical in nature, and amply illustrates the necessity of correlating the radiological findings with the clinical history. There is a full index and an ample bibliography, though the paucity of reference to English authors is striking.

L'osteo-synthèse métallique dans les fractures diaphysaires.

By ROBERT FRANTZ, Ancien interne des Hôpitaux de Paris. Paris: Masson et Cie. Pp. 190. Fr.35.

THIS is an experimental study of the various methods of fixing fractures by means of metallic appliances. The method of study is obviously limited, since dogs will not submit to the restraint of retentive apparatus and the actual conditions are not quite comparable with those in the human subject. However, valuable knowledge has accrued and emphasis been laid upon points whose significance was not sufficiently appreciated. It emerges that intolerance to metallic appliances is due either to imperfect fixation or to encircling bands or wires being pulled unduly tight. The authors show that the pressure per unit area can be minimised by increasing the size of the retentive apparatus. This has been done by using the apparatus of Contremoulin, which consists of a thin plate of aluminium bronze perforated in many places which almost completely encircles the bones and is fixed by extensions similar to Parham's bands. It is mechanically efficient and if applied at the right tension does not cause bony necrosis and, in fact, induces very slight reaction in the underlying bone. It causes irritation only if too loosely or too tightly applied. The author also recommends Cunéo's method of a staple fixed by encircling wires. But in this case a retentive plaster must also be applied. Finally, it is laid down that open operation should be employed only when bloodless methods have proved insufficient.

Trial of Captain Kidd.

Notable British Trials. Edited by GRAHAM BROOKS, Barrister-at-law. London: W. Hodge and Co. 1930. Pp. 223. 10*s*. 6*d*.

Captain William Kidd is a sad example of the game-keeper turned poacher. A seaman of good repute up to the age of 50, he was engaged under Admiralty warrant to capture French shipping in the year 1695 and was also commissioned to apprehend pirates. Off the Malabar coast he took vessels of several nationalities, sharing the cargo with his crew. When Kidd was finally brought home and tried for piracy and murder, one of the chief witnesses for the Crown was the ship's surgeon, Robert Bradinham. Bradinham's qualifications are not disclosed in the witness-box. A member of the crew naturally addresses him as "doctor" during the trial; but Kidd himself, when cross-examining, calls him rogue and rascal and suggests that he robbed the surgeon's chest. Kidd also, somewhat injudiciously, brought out the fact that he gave Bradinham one full share of the spoil; from the context it appears that there were 160 shares and that for this purpose the surgeon was rated at least no lower than an able seaman. The only part of Bradinham's evidence which is of professional interest is his brief but sufficient testimony on the murder charge. Kidd had broken the head of Moore, a gunner, with an iron-shod bucket. Bradinham says simply "Moore died the next day; the wound was small but the skull was fractured; I believe that he died of the wound." Kidd was hanged at Execution Dock in Wapping after his conviction in 1701. In a dying speech he blamed his mutinous crew for the piracies and he protested against perjured witnesses. He was sorry he struck Moore in a passion; he really had great love and respect for him. Kidd had a genuine grievance in having been deprived of certain evidence (French passes found on some of the captured ships) which he relied upon. But Mr. Graham Brooks, who edits the trial in the "Notable British Trials" series, holds that there was no substantial miscarriage of justice. Macaulay's "History" has a readable account of the Kidd episode, though the late Sir J. K. Laughton found it "more than usually inaccurate."

Réaction de Vernes à la résorcine et infection tuberculeuse.

By ROBERT LÉVY, Ancien Aide de Clinique, Préparateur à l'Institut d'Hygiène et de Médecine Préventive de Nancy. Paris: N. Maloine. Pp. 162.

THIS book consists of a practical description of the Vernes test for tuberculosis, together with statistical tables of results and other cognate details. The test is based upon the fact that when an aqueous solution of resorcine is added to the serum of tuberculous patients flocculation results; the amount of the flocculation is measured by the photometric method of Dr. A. Vernes at the Institut Prophylactique in Paris, which estimates the loss of light when a beam is passed through the fluid under observation. The first description of the technique was published by Dr. Vernes in 1926. Owing to the expense of the initial outlay on the apparatus the test has not been much used in this country. French and American workers report encouraging results with the test, which the author of this book now confirms. The first chapter of Dr. Lévy's book contains a description of the technique of the method and the rheometer and photometer which are necessary for the purpose of the test. The rest of the book is devoted to an account of the various types of tuberculous case, early and late, on which Dr. Lévy has tested the reaction. Perhaps the most interesting is a group of 46 patients who had received prophylactic inoculations of B C G vaccine. The results here showed that the serum of patients who had been injected with B C G gave optical densities rather higher than normal, but not comparable with those of definitely tuberculous patients. A short bibliography and a number of illustrations of apparatus are included.

THE LANCET.

LONDON: SATURDAY, OCTOBER 25, 1930.

UNDERGRADUATE TEACHING IN PUBLIC HEALTH.

In the Section of Preventive Medicine at the Winnipeg meeting of the British Medical Association, Prof. A. GRANT FLEMING, of Montreal, outlined a procedure which had been instituted at McGill University with intent to bring the medical student into early contact with instruction in public health and preventive medicine. The following is the plan. During the first year of his studies the pupil is introduced to the subjects of public health and preventive medicine with special reference to personal hygiene, while in the second year a course of lectures deals with public health administration and organisation. In the third year there are lectures on mental and industrial hygiene, while other fields where social hygiene plays a part are investigated by verbal instruction in field visits, or at laboratory demonstrations. In the fourth year a course of lectures deals with the preventive aspect of communicable diseases, the student being thus made aware in a broad way of duties which await him in his work as a family practitioner. By a personal study of the public health over a selected area, visiting a centre in the area, he becomes familiar with public health activities in actual operation, on which he has to frame a report for discussion with one of his teachers. In the fifth year, on a principle of option, certain of the students receive special instruction in the three main subjects of child welfare, mental hygiene, and industrial hygiene. This is a very detailed course, though several of the universities in the United States are in different ways already offering similar opportunities to their students. The usual method there is to introduce the subject of public health in the third year of the curriculum, but as there may be a method of option in force by which the student can occupy a certain period of his time, when he chooses, in pursuing his medical work along certain lines, it is often open to the American to acquire, before he is qualified, a considerable knowledge of public health.

In the British curriculum the accepted pattern of medical education undoubtedly overlooks the possible value of early familiarity with the principles of prevention. The medical student approaches the study of medicine as meaning the acquisition of the art of diagnosis and of the appropriate methods of treatment, and thus comes to regard the practice of medicine as implying the care of the sick, and nothing else. It was this position which stimulated Prof. A. W. SHEEN to include a department for students in his Utopian School of Health (see p. 907); and led Dr. G. F. BUCHAN, at the Congress of the Royal Sanitary Institute held last June in Margate, to point out that the majority of medical students, though destined for general practice and presumably ready to enter upon that practice from the date of registration, were little informed in the early manifestations of disease, and were thus unable to detect its premonitory or incipient stages, or to see where prevention might play, or might not have played its part. An interesting debate ensued upon Dr. BUCHAN'S paper, in which Prof. W. W. JAMESON drew attention to the resolution adopted in 1923 by the General Medical Council that two post-graduate years must elapse before the candidate could take the diploma of D.P.H. It is clear that this regulation is an invitation to educational authorities to relegate to post-graduate instruction the subject of public health, an invitation which it is only natural that they should welcome, seeing the elaborate and arduous nature of the studies with which the statutory period of the student's training is filled and overfilled. That period is admittedly insufficient to allow of a real mastery of the subjects, and the usual criticism here is that too much attention is paid to details by the teachers, while examiners are too often found making their inquisitions along side-lines in place of testing the students in regard to general principles. Such a view is easy to take, but it is not easy for any teacher to decide the point at which his information may be held superfluous on the ground that it is too detailed. For fundamentals can only be imparted if demonstrations, examples, and comparisons of a more or less elaborate nature are supplied as links in the story or assistance to memory. If the British curriculum is to find room at each stage for organised instruction in public health on the pattern of McGill University some subjects or sections of subjects must be recognised as outside the necessary course, perhaps only to this extent that candidates for qualifying examinations will not be compelled here to respond to tests—questions may be asked and credit may be obtained by answering them, but failure to answer them will not determine the issue.

Is the argument, that the study of prevention is applicable to all diseases and behind all therapeutics, so forceful that time must be found for it in the ordinary medical curriculum? The answer of the General Medical Council to the question is unequivocal, for eight years ago the Council revised the curriculum with the express object that throughout the whole period of study the attention of the student should be directed to the importance of the preventive aspects of medicine. The medical practitioner cannot yield his best unless he possesses the preventive viewpoint. He is, as Sir GEORGE NEWMAN has said, its exponent, interpreter, and practitioner. But it is too late to emphasise the preventive aspect of medicine when the whole of the study years have been filled alone with the curative aspect. It is not a question of time; it is a question of outlook. Prevention cannot, of course, be visualised by those who have

no knowledge of what they are to prevent; and the normal and healthy can only be appreciated by a knowledge of deviations from normality and health; but, unless the student, as he travels up the pathway of knowledge, learns to look back from the gross and obvious results of disease to their imponderable beginnings, and from there to the principles of right living which will avoid these beginnings, his education as a member of a social community has been a failure. He may become a popular and even a successful practitioner, affording relief in all kinds of suffering and disability, but he will be unable to make the least contribution to what is the goal of present-day medicine—the avoidance of occasions which lead to disease and infirmity.

TWENTY-ONE YEARS AT ALTON.

ON March 22nd, 1908, Sir WILLIAM TRELOAR, then Lord Mayor of London, discovered at Alton in Hampshire a group of bungalows, situated on 70 acres of sloping grassland, which had served as a hospital for soldiers wounded in the South African war, and were resting empty. "Here," he wrote in his diary, "was an opportunity." A Mansion House fund was opened, and in the same year was started the Cripples' Hospital which bears his name. During the 21 years which have elapsed since then more than 5000 children have passed through the hospital, of whom about 90 per cent. have been restored to health, after an average stay of almost exactly a year. For the first half of this time the cases admitted were almost exclusively tuberculous lesions of the spine, hip, and knee, for which treatment was hardly available elsewhere, and there was full opportunity for that intensive and uninterrupted study of this type of tuberculosis which has made the name of Alton familiar throughout the English-speaking world. Sir HENRY GAUVAIN satisfied himself, and slowly but surely convinced medical opinion, that a rigid conservative treatment under open-air hospital conditions, combined with aspiration of abscesses should they occur, could be trusted to prevent the secondary infections which had constituted the chief dangers to life and limb. The methods he applied having become orthodox, beds have been provided for these bone and joint cases in most parts of the country, and the supply is now becoming adequate to meet fully the demand. Since 1920, therefore, the scope of the work at Alton has widened; many gland cases and severe cases of lupus have been admitted, the light department being reorganised and equipped to provide for their efficient treatment. Plastic operations on healed cases of lupus are performed when needed by Sir HAROLD GILLIES and Mr. T. P. KILNER. During last year 167 children received general carbon-arc light baths for a total of 12,600 hours, and other forms of radiation accounted for another 6000 hours. To these abundant exposures Mr. DUKE-ELDER is inclined to attribute the remarkable immunity of the Alton children from tuberculous infections of the eye. The marine branch of the hospital was opened at Hayling Island in 1919, to offer the stimulus of climatic change and new environment to patients who flagged and needed the tonic of seaside conditions; 223 patients were transferred there from Alton during the year. Combined balneotherapy and heliotherapy is here freely employed. Lastly came the appeal to open the gates of the hospital to all types of crippled children.

A recent school census taken in Portsmouth revealed the fact that there were in the town nearly 500 cases of crippling, many of a severe type, for which no institutional treatment was available. Appeal was made to Alton which, with the approval of the Ministry of Health, decided to take the plunge. An orthopædic clinic was established at Portsmouth, and 55 beds reserved at Alton to serve its needs. Within three years, Sir HENRY tells us, the waiting-list was exhausted, and now any crippled child in the town can obtain immediate admission if need be. A network of other clinics which has long been growing up in the county of Hants is now to be served from the hospital, and Southampton has asked to come into the scheme. The work has required the appointment of an assistant to Mr. H. A. T. FAIRBANK, who has been consulting orthopædic surgeon since 1924. It has also stimulated the educational function of the hospital, for many orthopædic cases return again and again for treatment, and their schooling must go on in hospital if there is to be any continuity of teaching. Incapacitated bodily, the invalid child is often more patient and more eager to learn than the whole one; the handwork, in which even dull and backward children can share, has reached a high level at Alton. In the Hayling branch the children keep weather and tide charts, and get to know the conditions of sea life. The residential college attached to the hospital has turned out over 500 crippled lads trained to trades at which they can earn a livelihood after leaving, especially the making of all kinds of surgical boots and appliances. Uniforms for nurses and maids, as well as their own suits, are made by these boys in the tailors' shop. No wonder that this many-sided work has fired the imagination of the charitable public, and that last year at least 200 local associations contributed £50 or more to its upkeep, while legacies and memorial gifts amounted to £20,000. The work is national in character and patients are eligible for admission from any part of the British Empire. Medical men interested in the work are welcomed and the intensive post-graduate classes held annually are largely attended.

The new buildings which mark the Treloar Hospital's coming of age will enable the work to be done with greater efficiency and economy. We summarise their character on another page. Some may regret the passing of the old timber structures with their wholesome lesson that pioneer work needs no costly outfit; it was in the workshop at Alton that the first non-inflammable celluloid splints were manufactured, and all the apparatus for fixation and extension is of the simplest kind. No one who has visited Hayling Island can fail to have been struck by the coke braziers to warm

the bathers on the shingle and the wattle hurdles to break the wind. But the maintenance of wooden wards is uneconomical, and the layout of the new scheme with a terrace nearly 1000 feet long, on which all the ward-units directly give, will reduce to a minimum the fruitless pushing and pulling and carrying which at present occupy so much of the personnel. Behind, each ward-unit is connected by a covered way with the treatment block, the plaster room, and other specialised units. When complete the Treloar Hospital will have a material framework worthy of the character and spirit of the work carried on within it.

THE PROGRESS OF RADIOLOGY.

THE presidential address to the Electro-Therapeutic Section of the Royal Society of Medicine was delivered last week by Dr. J. M. WOODBURN MORISON, lately in charge of the radiological department at the Edinburgh Royal Infirmary, and now occupying the new chair of radiology in London University tenable at the Cancer Hospital. At the outset Prof. MORISON defined radiology as the science and art of radium rays, X rays, and other electro-magnetic waves, the application of which to the relief of suffering humanity is one of the fundamental problems in medicine. Although in the early days the status of the radiologist was little more than that of a photographer, he is, in fact, a practitioner of medicine, first and foremost a physician; he must seek for truth, holding his theories lightly. Prof. MORISON accorded a word of praise to the manufacturers for designing apparatus of great power and precision; he put to them two further objects of desire—namely, shock-proof apparatus and non-inflammable films. In the very precision of their wares he saw a danger, for almost any intelligent person could be taught to utilise these machines or supervise their working, which induced a tendency to forget that in the diagnosis and treatment of disease by radiological methods a knowledge of medicine and a special training in radiology are alike essential. Paradoxically the existence of the X ray therapeutic department of a hospital could, he said, be justified by its failures. The physician had to consider the cure of the whole man; if only the disease as named were considered, the treatment might indeed be a failure, but it was different when the whole case was reviewed. Inoperable advanced cases of malignant disease were guided and cared for through a long and trying period, the life of the patient was made easier and brighter, the pathway more smooth.

From these major premisses Prof. MORISON has led on to make four points in the relation of radiology to malignant disease. In the first place the public is intensely interested. It is a generous and enlightened public, but he deprecated the tendency in recent books to take too optimistic a view of present achievement, and to give the public the impression that radium is a cure for cancer. Tell the public, he said, the truth about radium so far as it is known, and the better it will be for everyone, even if disappointment is inevitable. His second point was that there is no cause for alarm in the increased number of deaths from cancer, for three-fourths of the increase is due to ageing of the population leading to greater numbers being alive at the cancer age; it should provoke thought when the available statistics show no evidence that treatment by surgery has in any way affected the death-rate from cancer. His third point was that the Radium Commission does not regard the question of radium and cancer as one which is settled. It is rather one which calls for careful inquiry and research under the guidance of the leaders of the medical profession who, by virtue of their position as teachers and research workers, are best qualified to give judgment. The present position in this country is, he said, full of interest and risk; for while it is dangerous for anyone without adequate training to attempt major surgery, it is just as dangerous for anyone without adequate training to use radium. To point the lesson he read extracts from the letter of a distinguished continental radiologist who wrote: "Each day has brought us one of your compatriots, eager to learn. Some of them stay here a fortnight, take notes, and depart, believing in all good faith that they have grasped all we do and how we do it." Thorough training, then, in radiology is essential (the lecturer's fourth point) for those who are going to use radium or to advise others regarding its use. Methods come and go, and come again. For the moment, said Prof. MORISON, we are back again to surface application. The trend of radium therapy on the continent was to avoid wherever possible the introduction of needles and tubes into the tissues, and to develop the surface applicator by distributing it so as to produce a uniform radiation on the skin surface. The work at Brussels on recording the radiation in terms of energy absorption promised well, for it is only the radiation which is actually absorbed that can be causing changes in the tissues. Whether the biological changes are in direct proportion to the energy absorption remains as yet undecided. The bright spot in radium treatment of malignant diseases is in cancer of the cervix, but radium therapy has not yet replaced the use of the knife in the treatment of cancer. The last eleven words are a quotation from an unnamed writer. It may, said Prof. MORISON, never do so, although it is a useful auxiliary capable of alleviating distressing symptoms and of prolonging life.

The close of the address was devoted to the status of the radiologist which in this country Prof. MORISON regards as far from satisfactory. The radiologist is in charge of one of the most important sections of hospital work, but often he lacks full authority. He is expected to treat cases, but is not given charge of beds, and too often he is not considered to be on an equality with other members of the staff. "I look forward," he said, "to the day when every radiologist who has cases to treat will have charge of beds in the hospital. For the benefit of the patient and for the true advancement of radiology this is a necessity." There are signs that the day he looks for is coming.

ANNOTATIONS

DRUG ADDICTION IN AMERICA.

THE public health service of the United States has estimated that there are about 110,000 drug addicts in that country, or approximately 1 in every 1000 of the population, but it is, of course, impossible to know the actual number. Dr. W. L. Treadway, assistant surgeon-general to the service,[1] thinks that any estimate above 200,000 is beyond reasonable probability, and that there is much tendency to exaggerate. At any rate, during the last three years 11,697 persons were committed from the continental United States to Federal prisons for violation of the Federal narcotic laws; 10 per cent. of them were women. The offenders come from every grade of society, but it has been estimated that 80 per cent. belong to the unemployed underworld, and that 20 per cent. have served five or more terms in prison for other offences unconnected with their addiction. The proportion of yellow races is high—about 30 per cent.—and these usually smoke opium. A large number of the women are prostitutes. Few of the cases are under 20 or over 40 years of age, and there is some reason to suppose that new young addicts are not being made as abundantly as in the past. The average age among 1660 individuals was 38. Some of them were earning their living lawfully, but the majority tend to increase their doses, become unsteady, irregularly employed, and migrant. Most of the drug-taking is in large centres of population. More than half the accused persons had had a common school education; 15 per cent. were nearly or quite illiterate; and another 15 per cent. had had a high-school education. Only 0·06 per cent. had had professional training. As a general rule, Dr. Treadway says, alcoholic drunkenness was not associated with drug addiction, and 936 out of 1317 male addicts reported were total abstainers; only eight took alcohol in excess. The drug of choice was morphine or heroin, more often given hypodermically or intravenously than by inhalation. The precipitating causes attributed are interesting: medical treatment, 285; self-treatment for pain, 212; influence of other addicts, 594; curiosity, thrill or bravado, 112.

AMENTIA.

A VALUABLE collection of records and publications on Amentia has been presented to the Library of the Royal College of Surgeons of England by Dr. Thomas Brushfield, who was formerly in charge of the Fountain Hospital for Imbeciles at Tooting, under the Metropolitan Asylums Board. The records comprise the detailed histories which Dr. Brushfield compiled of all the children who came under his charge, from his appointment in 1914 till his retirement in 1927, with photographs of the children taken on admission and after treatment. The histories are classified by the types of amentia—mongolism, cretinism, microcephaly, &c.—and Dr. Brushfield has preserved elaborate details, not only of each child's physical condition and family history, but of the mental tests employed in each case and of the progress of such as were fit to attend school. All these records are fully indexed and numerous tables have been drawn up summarising and analysing the material from various aspects. These histories and statistics, covering so considerable a period from the time when the particular study of mentally deficient children was only beginning, are in many ways unique. He has presented them to the College library so that they may be readily accessible for any research worker in this subject, and he has also presented his large collection of papers and cuttings on amentia, gathered from all over the world. These will be kept together in connexion with Dr. Brushfield's own records, and the donor has prepared a full index to them. The papers cover not merely the varieties of amentia, but other subjects that may have a bearing on it, and there are numerous entries in the index under such headings as Birth, Encephalitis, Endocrines, and Skulls. To complete the usefulness of the collection, Dr. Brushfield has compiled a bibliography of books and articles issued up to the present on all the subjects covered by his index, of which there is no copy in his collection. He further very generously proposes to keep this bibliography up to date, and to incorporate into the collection whatever publications he may continue to collect.

[1] British Journal of Inebriety, October, 1930, p. 50.

CERTIFICATION OF THE BLIND.

THE first regional clinic for certification of the blind was established in September of last year, and serves a population of 2,800,000 in Glasgow and S.W. Scotland. In his annual report Dr. A. S. M. Macgregor describes the first four months' work of the clinic and the sequence of events which led to its formation. The Blind Persons Act of 1920, designed to provide special education and financial and other help to those suffering from major defects of vision, defined a blind person as "a person too blind to perform any work for which eyesight is essential." This definition was variously interpreted by the examiners of the voluntary societies which look after the blind. The need of a uniform standard for admission to a register of blind persons was soon realised. The Mission to the Outdoor Blind for Glasgow and the south-west of Scotland, under the guidance of Dr. A. Freeland Fergus, appointed a competent ophthalmologist in 1925. Other Scottish voluntary societies for the blind followed suit. The next step was the combination of Glasgow with the burghs and counties of south-west Scotland to form a special joint committee to administer the Act. This joint committee, on the recommendation of a report in 1926 by Dr. Fergus and Dr. J. L. Halliday, decided to open a certification clinic.

The clinic is located in Glasgow municipal buildings, and has a staff of four ophthalmic surgeons. Each applicant for certification is introduced through a voluntary society. The candidate is examined by two surgeons independently, who confer as to the decision. The standard of blindness adopted is based on the numerical standard of visual acuity issued in a Government circular for England in 1926 and for Scotland in 1928. In practice it is found, however, that other considerations, such as the general bearing and behaviour of the applicant, including tests to outwit a malingerer, are very necessary. Applicants suspected of malingering or those on the border line are referred for re-examination after from one to six months. The clinic exists only for certification, but the applicant is recommended where to go for the treatment which he needs. A home teacher of the voluntary agency introducing the patient i

present at each session in order to secure the follow-up of candidates who are referred for treatment. The Department of Health for Scotland insists that every applicant for a pension in this area should be certified at the clinic, opportunity being afforded for appeal against an adverse decision. Arrangements are made for home visitation by the ophthalmic surgeon of applicants unable to attend. There are 3000 names on the registers of the voluntary societies in the area. It is anticipated that ultimately this clinic will become the centre for certifying cases of blindness at all ages and for all purposes.

During the first four months, 316 applicants were examined at the clinic and 23 at their homes. Half of the 339 were certified as blind; 74 per cent. of the candidates were over 50 years of age, and males outnumbered females in the proportion of 10 to 7. Half the applicants were Glasgow residents. Treatment recommendations were made for 29 of the 170 certified, including 14 who required the extraction of a cataract. Treatment recommendations were also made for 71 of the 169 refused. In the report by Dr. Fergus and Dr. Halliday (1926) it was estimated that 17 per cent. of cases of blindness in Glasgow were due to venereal disease, and among the 339 first applicants at the clinic it was found that 18·2 per cent. had lost their vision as a result of venereal disease. The majority of the present applicants to the clinic are candidates for pensions, but it is intended by degrees to re-examine all the 3000 blind persons on the registers. The proportion of blind persons registered in south-west Scotland is, it seems, somewhat lower than in England and Wales.[1]

SNAKE VENOM IN EPILEPSY.

THERE are several cases on record where a single snake-bite is said to have caused a permanent arrest of fits in an epileptic. It is not surprising therefore that attempts have been made from time to time to establish a snake-venom therapy in epilepsy. Crotalin, prepared from the venom of the American rattlesnake, was used as early as 1910 in America and reported on favourably by R. H. Spangler, of Philadelphia. As a result, crotalin was tried rather extensively in the States with varying success until 1915, when a comprehensive paper by D. A. Thom claimed to show that the evidence of its usefulness was negligible, and that the preparation then in use was not always free from septic organisms. After Thom's paper the popularity of crotalin seems to have waned, although in 1927 Spangler was still using it for non-specific desensitisation in epilepsy, controlling the dosage by the degree of eosinophilia. Another snake serum known as contra-toxin had some vogue in this country for a short time owing to the claim made by Dr. F. Mehnarto that, by combining one type of reptilian plasma which produced hæmolysis with another type which produced agglutination, he could obtain a serum which produced a lytic action on various micro-organisms. This Mehnarto serum was in fact tried in London just before the war with some apparent benefit in cases of tuberculosis owing, one may suppose, to its non-specific action in producing protein shock. For many years a good deal of scientific work on snakes and snake venoms has been going on at the Port Elizabeth Museum and Snake Park, South Africa. The main object and outcome of such work has, naturally enough, been the treatment of the various snake-bites. But the director, Mr. F. W. FitzSimons, believes that snake venom may have a wider therapeutic value. The preparation that he has called venene is a blending of venoms from different species of snake, and is collected by a method which is said to make septic contamination impossible. This preparation has been widely used for epilepsy in South Africa, and encouraging results were reported by Mr. FitzSimons in a paper read before a combined meeting of the British and South African Associations for the Advancement of Science in July of last year. Epilepsy cures that have had their day and ceased to be are so many that anyone with knowledge of the disease is justifiably cautious—and sometimes, it may be, unjustifiably sceptical. There certainly seems to be a prima-facie case for investigation of the claims put forward for venene. Mackenzie Wallis, W. D. Nichol, and M. Craig,[1] and others have suggested the presence of an allergic element in a certain proportion of cases of epilepsy. Such benefit as has resulted from venom treatment may well have been due to desensitisation.

[1] See THE LANCET, 1930, i., 1023.

CHARLES MAITLAND.

IN spite of the fact that he raised a storm of abuse in his own day, Charles Maitland, pioneer of inoculation for small-pox, has suffered the neglect of succeeding generations. A pamphlet giving a short account of his work has recently been published by his compatriot, John Malcolm Bulloch, at Aberdeen. Maitland was a native of Methlick, and was educated at Marischal College; he was born in 1668 and died at Aberdeen at the age of 80. The first British subject to receive inoculation against small-pox was Edward Wortley Montagu, son of Lady Mary Wortley Montagu, and the operation was performed by Maitland at Pera in 1717. The reason for the appearance of Maitland at Constantinople is unknown, though he may have gone there to investigate this very method of inoculation. Lady Mary had a high opinion of small-pox inoculation, for she suffered her four-year-old son to receive the lymph in one arm from an old Greek woman with a blunt and rusty needle, and later from Maitland, in the other arm, with so much better practice that he assures us the boy did "not complain." On his return to England in 1718, Maitland received permission to inoculate six condemned prisoners at Newgate in return for remittance of their sentence. He seems to have been well satisfied with his experiment, for the apothecary of Christ's Hospital, Isaac Massey, reports him as being "as confident and positive of success . . . as if he had had 20 years' experience without any miscarriage"—a description which reflects the immutability, or otherwise, of science. Later in the year he inoculated several persons in Hertfordshire, and in the following year published an account of his work which earned him hearty condemnation from all quarters, not excluding that of the medical profession. A sermon "against the danger and sinful practice of inoculation" was preached by the Rev. Edmund Massey. The apothecary, Isaac Massey, however, was Maitland's supporter, and wrote a pamphlet to vindicate him, and four other pamphlets in his favour were produced by Dr. James Jurin, physician at Guy's Hospital. In 1724 the King sent Maitland to Hanover to inoculate his grandson Prince Frederick Lewis, afterwards Prince of Wales. Maitland had an anxious time supervising the care of the prince during the eruption, regulating his diet, and counting the spots, of which he assures us there were "above 500." The appearance of the pustules evidently was not without

[1] THE LANCET, 1923, i., 741.

serious possibilities, for Maitland says fervently: "But, thank God, his eyes are perfectly free of them." The prince did very well, and lived to goad his father into the remark: "My dear first-born is the greatest ass and the greatest liar and the greatest canaille in the whole world, and I heartily wish he was out of it." For this royal inoculation Maitland was paid £1000, but though his success was considerable in Germany he was received with renewed opposition on his return to England. In 1726 he repaired to Scotland; here he seems to have been unfortunate, for he inoculated a child "labouring under a hydrocephalus" of which he had not been informed, and the result was fatal. In 1727 he is mentioned as inoculating cases in London, but from that time onwards Mr. Bulloch can find no account of his work. He died at Aberdeen in 1748, leaving the sum of £333 6*s*. 8*d*. to the poor of his native parish. As an enthusiastic and courageous experimenter he deserves to escape from that oblivion from which Mr. Bulloch has rescued him.

EIDETIC IMAGERY.

WHILE the work of Prof. E. R. Jaensch is well known to psychologists and educationalists, it is perhaps too little known to physicians, at least in this country. An excellent translation recently published [1] leaves no excuse for ignorance of a subject as important as it is interesting. Prof. Jaensch and his brother believe that they have established experimentally the existence of optical perceptual or eidetic images which take up an intermediate position between sensations and images. "Like ordinary physiological after-images, they are always *seen* in the literal sense. They have this property of necessity, and under all conditions, and share it with sensations." Their character is, of course, fluctuant and according to personality they are nearer to, or remote from, both after-images and memory images at either extreme. The conditions under which these images are seen is somewhat peculiar. First, as is natural, the subject (the "eidetic" is usually a young subject) must clearly understand the nature of the experiment and what is meant by seeing—that is, not memorising. Further, the image proper is seen best on a homogeneous dark grey background of 50° white or 210° black cloth on the colour disc. This screen, therefore, is standardised for all experiments. Most interesting fact of all, particularly for medicine, is the experimental discovery that the eidetic phenomenon is closely correlated with the basedowian and tetanoid syndromes, and occurs in persons of a physique found with these syndromes. Fundamentally, however, within the limits of Jaensch's researches, these symptoms are merely normal physiological characteristics of a certain youthful stage of development, and in no way pathological manifestations. Pure types of so-called B. (basedowian) and T. (tetanoid) types are rare even in youthful subjects. The majority of cases are a fusion of both. Experimentally, it is obviously desirable to study the extreme cases. Such a study as Jaensch's has interesting light to throw on reaction types in psychopathology, and illuminates in addition many peculiarities in learning met with by educationists. A still more interesting medico-psychological correlation with the eidetic is the presence of abnormal capillary forms on the nail margins of certain subjects of eidetic imagery—for example, in hypothyroid cretins. Examination of groups of backward children, and children in goitre areas, substantiated this correlation. The author epitomises much of the recent work on these fascinating allied topics and gives us but a glimpse of a subject which promises a fruitful field of research in the realm between general medicine and psychopathology.

[1] Eidetic Imagery and Typological Methods of Investigation. By E. R. Jaensch, Professor of Psychology at the University of Marburg. London: Kegan Paul. 1930. 7*s*. 6*d*.

PHYSIOTHERAPY FOR INDUSTRIAL INJURIES.

THE severity of an industrial injury cannot be assessed by considering the initial lesion alone. The rate of healing and the final disability are of much importance to the parties concerned—to the worker himself, to the employer who suffers from disorganisation of his industry by loss of skilled labour, and to the insurance company which bears the financial burden. Rapid recovery and a good functional result are of the greatest possible importance, and it is somewhat surprising that no more systematic procedure is in vogue for the management of injuries in industry. In the United States certain insurance companies have established centres for their treatment, and have found that the initial outlay and the cost of upkeep have been justified, and a recent report by Dr. Paul Lemariée,[1] surgeon to the Michelin works, will repay study by those interested in the possibilities of physiotherapy. Situated beside the first-aid and surgical treatment centres of the Michelin works there is, he says, a well-equipped department containing apparatus for diathermy, ultra-violet and infra-red irradiation, with apparatus for active and passive re-education of function, and an X ray installation. This department works in close coöperation with the surgeons, and the results have been found very satisfactory. Lemariée reports in some detail on the treatment of some 4000 cases of burns and wounds of varying severity, and his observations on the ultra-violet treatment of burns and scalds support the favourable opinion held by other workers in actinotherapy; for it is claimed that the method prevents contractures, leaves a supple scar, and brings early restoration of function. The improvement obtained by coöperation of casualty and surgical departments with a department of physiotherapy is generally recognised in this country, but suitable facilities for special methods of treatment are not always available for, or sought by, the victims of industrial accidents. It is clear that a situation of this kind demands the coöperation of the interested parties.

[1] Paris Méd., August 23rd, p. 161.

DIGITALIS IN PNEUMONIA.

OPINION still differs about the use of digitalis in pneumonia, and attempts have lately been made to settle the question both experimentally and clinically. Last April Prof. W. E. Dixon and Dr. G. N. Myers reported to the Royal Society of Medicine [2] on the value of the drug in the comparable toxæmia produced in animals by injection of diphtheria toxin—which was chosen because the dose could be accurately measured. It was found that 1/350th of a cubic centimetre killed 95 per cent. of the guinea-pigs. If, however, a reliable tincture of digitalis had previously been given, the animals nearly always survived three times this dose, and the same effect was observed if the toxin was given first, provided the digitalis was not long delayed. Strophanthus had the same effect as digitalis, except that it needed to

[2] See THE LANCET, 1930, i., 964.

be given for a longer time beforehand to have any effect on the toxæmia. Dixon and Myers suggested that digitalis, in taking time to act, occupied a part of the cardiac structure to which the toxin normally attached itself, and thus made the latter innocuous; and the inference seemed to be that the drug was definitely helpful. W. L. Niles and J. Wyckoff,[3] on the other hand, provide opposing evidence from a clinical study of 404 cases of lobar pneumonia. Alternate cases were given digitalis, and in all cases electrocardiograms were taken daily during the febrile period and on alternate days afterwards. The dosage was never more than 0·15 cat units per pound of body-weight, and the drug was stopped immediately if toxic symptoms were observed. During the first year of the investigation the digitalising dose was given at six-hourly intervals over a period of 24 hours, but owing to the frequent incidence of toxic symptoms the quantity taken was reduced by nearly half during the second year. The results appear to be anything but favourable to digitalis, for in every group the mortality seems to have been higher with its use. In the whole group there were 33 cases of auricular fibrillation and flutter, and 16 of them were treated with digitalis; 14 of these died, whereas there were only 9 deaths among the 17 who did not have digitalis. The experimental and clinical evidence thus appear to be in conflict, but it must be remembered that the condition under which experimental digitalis therapy was efficient was that the drug was given before or very soon after the toxin—a relationship very rare in practice. Furthermore, it is possible that better results might be attained by greater clinical discrimination than is possible when alternate cases have to be treated, for purposes of investigation, by a particular method.

FIRST-AID ON THE FRENCH ROADS.

THE organisation of help to those who fall by the way in this age of fast-moving traffic is being taken up in other countries. On Oct. 13th Mr. Léon Auscher, President of the Union Nationale des Associations de Tourisme, and Dr. Pierre Béhague, President of the Commission de Secours Médico-Chirurgicaux et de Protection aux Blessés de la Route du Touring-Club de France, gave a lecture and demonstration on first-aid on the French roads to an international gathering of experts in this field. In the course of only 18 months Auscher and Béhague have covered the map of France with between one and two thousand first-aid posts whose presence is indicated by the Geneva Red Cross emblem placed in a prominent position at an average of every five kilometres on many of the main roads. This rapidly growing organisation is served by a central office with a staff of only five persons, of whom only the three most subordinate receive a salary. When some point on a main road begins to become notorious for accidents, an inspector proceeds to it and then goes to the nearest homestead in search of an occupant whose vocation keeps him at home day and night. Arrangements are made with this person to house the first-aid equipment and to undertake the necessary duties in case of accidents. A small fee is provided, so that the time spent by this person in attending to the victims of an accident does not represent a dead loss to him. The outfit which he uses up on such an occasion is replaced by the central office within 24 hours. To meet the expenses of the Red Cross sign-boards, a small space is reserved at the bottom of them for the name of that commercial undertaking which has financed them; and the expenses of the first-aid telephones are met, to some extent, by their being made available to persons other than those using them for first-aid purposes. Dr. Béhague demonstrated some interesting tables showing the relative frequency of road accidents on different days of the week and at different hours of the day. Sunday shows the highest peak, and Monday also, being part of the week-end or *semaine anglaise*, is a bad day for accidents. So is Wednesday, which is often a market day. The distribution of road accidents in the several hours of the day showed how important is the rôle played by meals, including liquid nourishment, in the accidents which overtake the motorist and his victims.

[3] Amer. Jour. Med. Sci., Sept., 1930, p. 348.

A DEMONSTRATION IN CHILD HEALTH MEASURES.

FORTY southern communities in the United States applied for a demonstration in child health measures when this was offered by the Commonwealth Fund, and the choice fell upon Athens, the county seat of Clarke County, Georgia, and its environs, an area of 24,000 inhabitants. More than half the residents are white mill-hands and poverty-stricken negroes. A public health programme had been initiated by the health officer in 1920, but before the beginning of the demonstration in 1924 there had been no accepted plan, and no coördination of health services. The report of the Fund [1] describes the institution of a comprehensive scheme based on three aims: to increase the service of the health department in its familiar fields; to establish health supervision of children from the prenatal period through the school years; and to educate mothers, children, and the community generally in healthy living. One of the most important innovations under the scheme was the introduction of five nurses and a supervisor to supplement the work of the health department. Previously there had been one nurse who was quite unable to cope with the work devolving on her. The laboratory service was also improved by the appointment of a full-time bacteriologist and the introduction of modern equipment. Control of communicable diseases became much more efficient as the result of better supervision, and daily visits to the schools by the nurse. Health records were kept by the teacher and were handed to the doctor at the time of medical inspections. Vision and hearing tests were held at the beginning of the school year, and the importance of dental treatment was emphasised by various devices, one plan being to offer a holiday for classes which had secured 100 per cent. correction of dental defects. An oral hygienist visited the schools and demonstrated on the care of the teeth, at the same time referring to a dentist those children who showed dental defects. Health teaching was introduced into the school curriculum for ten minutes at the beginning of the day; milk lunches and even midday meals were provided in some schools, but the negro children were often so poor that they could not afford the small cost asked. Improvements in lighting and ventilation were made in the classrooms wherever possible. For the care of infants and young children several welfare centres were opened of which eight were active at the end of the demonstration; the infant mortality was found

[1] A Chapter of Child Health. Report of the Commonwealth Fund Child Health Demonstration in Clarke County and Athens, Georgia, 1924–28. New York: Commonwealth Fund Division of Publications. 1930. Pp. 169. $1.

to be decidedly less among children attending the centres than among the general population. Supervision and instruction was instituted among negro midwives, many of whom had had no previous training, and the value of antenatal medical attention was stressed as much as possible, with good results. During the four years 1920–23 the deaths of 372 children were recorded; the deaths during the period of the demonstration fell short of this number by 124, and though it is impossible to draw definite conclusions from such figures it seems probable that the health campaign played a part in the reduction. Since the end of the demonstration a ruthless demand for economy has cut down the additions to the health service so thoroughly that only the full-time laboratory service and three nurses in place of one remain as an improvement of the original position. Apparently, although public health may be purchasable, Athens and Clarke County have concluded that its price is too high.

PROPOSED NEW FORMULÆ FOR THE B.P.

A Pharmacy Subcommittee of the Pharmacopœia Commission was formed in September, 1929, and has now issued its first report,[1] which incorporates suggestions for some new formulæ. An important economy would be effected by the permission to use industrial methylated spirit in making solid extracts and certain other preparations, subject to the regulations of the Board of Customs and Excise. For example, among the new formulæ set out in the report the use of industrial methylated spirit is suggested in the preparation of extractum belladonnæ siccum, extractum cinchonæ, extractum colchici siccum, fel bovinum purificatum (in future to be known as extractum fellis bovini), linimentum and emplastrum belladonnæ, liquor picis carbonis, and certain resins. Another economy is proposed in the replacement of olive oil by cotton-seed oil in certain preparations, such as unguentum hydrargyri compositum, and in linimentum camphoræ, since a high-grade olive oil will be described in the Pharmacopæia. In parts of the Empire outside the British Isles the use of arachis oil or sesame oil will be permitted. The subcommittee recommend that for convenience in manufacture the quantities in the formulæ for glycerins should be expressed in weight. The error involved in measuring glycerin would thus be avoided. They also recommend the inclusion in the Pharmacopœia of concentrated preparations which, when diluted with seven times their volume of distilled water, will be equivalent in strength, if not in flavour, to fresh infusions. Practitioners who prefer fresh infusions would be able to ensure that these will be dispensed by adding the word "recens" to the name of the infusion. Digitalis should be dispensed only in fresh infusion. In response to the suggestion that lard and benzoated lard should be replaced as far as possible by a base not liable to develop rancidity, experiments have been made with mixtures of paraffin and various fats, with the result that a formula has been devised under the name of unguentum simplex. This consists of wool fat (1 part), hard paraffin (2 parts), and soft paraffin (17 parts), and could be used for certain of the official ointments which are now made with lard. Since an international agreement requires that the name "tincture" shall not be given to simple solutions of chemical substances, the two tinctures of iodine official in the B.P. 1914 should be renamed and classed as solutions, the present names being retained as synonyms. We can confirm the conclusion of the subcommittee that an official preparation corresponding to the "French tincture of iodine" is required; they propose that the need would be met by a 10 per cent. w/v solution of iodine in alcohol (95 per cent.), which might be named liquor iodi simplex. A preliminary survey of the report does not suggest that the criticisms which are invited in cordial terms will be drastic. We are assured that careful consideration will be given to all opinions evoked by the report, and recommend physicians to study it with attention.

[1] Pharmacopœia Commission. Reports of Subcommittees. I. Report of Pharmacy Subcommittee, August, 1930. Published by authority of the General Medical Council. London: 44, Hallam-street, W. Pp. 35. 1s.

PATHOLOGY OF THE PERIPHERAL CIRCULATION.

STARR[1] reports that he has used the histamine reaction to investigate the state of the circulation of the feet in pathological conditions. Three of 11 cases of arterio-sclerosis with hypertension showed a deficient circulation, as also did two more after the onset of cardiac failure. These results suggest that an increase in the systemic blood pressure may compensate an impairment of the circulation due to arterio-sclerosis. In cardiac failure the reaction may be within normal limits even in the presence of œdema, and it is not until other signs of failure are well marked that the reaction becomes definitely abnormal. The investigation of cases with a lesion of the peripheral nerves confirmed Lewis's conclusions that the flare is nervous in origin, these cases developing a well-marked wheal but no flare. In diabetes mellitus the reaction enables one to assess the degree to which the arterio-sclerosis of the main vessels has been compensated by a rise in blood pressure or by the opening up of anastomotic channels. The reaction responded fairly rapidly to alterations in the general condition of the patient and also to improvement with treatment. It is also suggested that the reaction should be of value in deciding the level at which amputation should be performed in cases of gangrene.

[1] Starr, I., jun.: Amer. Jour. Med. Sci., August, 1930.

THE annual dinner of the Royal Society of Medicine will be held at the Mayfair Hotel on Thursday, Nov. 20th, at 7.30 for 8 P.M. The Duke of York will attend the dinner, and the Bishop of Birmingham and Sir John Simon will be present as guests of honour.

THE Fifth Conference on Maternal Mortality will be held at Friends House, Euston-road, on Oct. 27th, at 2.30 P.M., the Duchess of Atholl presiding. The principal speaker will be the Minister of Health, Mr. Arthur Greenwood. Miss Marion Phillips, D.Sc., and Lady Erleigh will also take part.

AT the opening meeting of the Section of Medicine of the Royal Society of Medicine, to be held at 5 P.M., next Tuesday, Oct. 28th, a discussion on Research in Clinical Medicine will be opened by Dr. J. A. Ryle, physician to Guy's Hospital; Dr. H. Francis Moore, professor of medicine at University College, Dublin; and Dr. Helen M. M. Mackay, late Ernest Hart and Beit Memorial Research Scholar, who will deal briefly with the natural scope and limitations of such research and the measures, if any, which should be taken for its direction and encouragement.

MODERN TECHNIQUE IN TREATMENT

A Series of Special Articles, contributed by invitation.

CCCIX.

TREATMENT OF POSTERIOR POSITIONS OF THE VERTEX.*

IT is well known that posterior positions of the vertex are more common in the antenatal period than at delivery. The following statistics are taken from the "Queen Charlotte's Practice of Obstetrics": "The antenatal department has demonstrated that at the thirty-sixth week of pregnancy a posterior position of the occiput is present in 45 per cent. of vertex cases examined. As labour begins the majority of these positions rotate and are delivered as anterior ones. Out of 18,500 presentations it was found that the posterior position remained so during labour in 363 cases, this being equivalent to 1·95 per cent." By antenatal examination the condition is easily diagnosed, and it is important to make out before labour whether or not the head is well flexed. If the head is low in the pelvis, it is generally safe to assume that it is well flexed. The relative height of the occiput and the frontal pole should be estimated; the lower down the occiput is felt the more complete is the flexion of the head.

Two types of cases tend to have a posterior position of the occiput: (1) those in which there is a mild degree of pelvic contraction or a relatively rather large head, and (2) those in which the child's head is rather small and lying low in the pelvic cavity. Cases where the child's head is small and very low at the onset of labour are apt to lead to a long labour, though rotation often occurs late in the second stage.

Measures During the Antenatal Period.

When the head is high and badly flexed the apparent disproportion is greater than the real disproportion. It is often found that during the week before term the flexion of the head improves, and then it will be found to engage satisfactorily. It is advisable to make a vaginal examination in the antenatal period in order to exclude the possibility of an abnormal pelvis, and also to gauge as accurately as possible the size of the pelvis.

In my experience, efforts to rotate the child manually per abdomen and per vaginam have proved unsuccessful, but in a number of cases the following method of treatment has been successful in causing rotation to an anterior position before the onset of labour, and at the same time flexion of the head. During the last four weeks of pregnancy the patient is given a fairly tight elastic belt to wear day and night. A thick pad—the length of the pad being the width of the belt—is applied over the side of the uterus, well out over the back of the child, and the belt put on over this. The pad should be about nine inches long and four inches in diameter. It can be made of cotton-wool wrapped in a piece of soft linen, or it can be made by folding a soft face towel and putting a few stitches in so as to keep it the correct size. In an L.O.P. the pad should be applied on the left side of the mother's abdomen. This causes very little inconvenience to the patient, and it is successful in a fair number of cases in causing rotation to an anterior position.

Measures During Labour.

Unless adequate abdominal palpation is practised early in labour, it is very easy to miss the presence of a posterior position. In every case of labour with a long first or second stage, this complication should be thought of. A vaginal examination will usually clear up the diagnosis easily. If necessary, it is well worth while to give an anæsthetic in order to be able to make a thorough examination of the abdomen and vagina, and so to arrive at a correct diagnosis. In a primigravida a posterior position of the vertex is a trying complication, since it inevitably means a long labour. The first stage is generally tedious—sometimes lasting for several days. The labour pains often occur with great frequency, and seem to be more painful to the patient than in normal labour. The dilatation of the cervix tends to be very slow, and early rupture of the membranes is not uncommon. On vaginal examination early in labour it is often impossible to make out anything very definite beyond the fact that there is an elongated bag of membranes, and that the presenting part is high up. When an examination is made later in labour and the head is lower it is important to make out the position of the anterior and posterior fontanelles. When both fontanelles can be felt the diagnosis of a posterior position is certain. When the anterior fontanelle alone can be felt, then the case is likely to be one in which interference will be necessary.

Since a long first stage is to be anticipated, the possible exhaustion of the patient should be foreseen, and all measures should be taken to conserve her strength. It is very well worth while to give her plenty of analgesics in the first stage of labour, so that when the second stage begins she is not already worn out. Hypodermic injections of morphia gr. $\frac{1}{4}$ are useful, and there is no objection to repeating morphia gr. $\frac{1}{6}$, or combining with it hyoscine gr. 1/150. In addition to morphia it is often useful to give pot. brom. grs. 20 and chloral hydrate grs. 20, and this last mixture can be repeated as required. To aid rotation the patient is told to lie on the side opposite to that on which the back of the child is situated.

It is of the greatest importance not to interfere in any more active way until full dilatation of the cervix has been accomplished. Many disasters occur from neglect of this fundamental rule. It is often difficult to avoid interfering too early, as the patience of all concerned is much tried, but knowledge of the bad results which follow the application of forceps before full dilatation should be an effective deterrent. If the mother is not too exhausted at the beginning of the second stage, there is much to be gained by allowing the labour to continue undisturbed. If the head is descending at this time, it is an indication that rotation is occurring, and if there is no fœtal distress, and time is allowed, the child will most probably be born naturally as an anterior vertex.

At the beginning of the second stage it is an advantage to let the patient lie on her back with her knees flexed and her feet on the bed. Rotation appears to take place much more easily in this position than when the patient is lying on her side. Since discovering this accidentally, it has been my practice to place the patient in this position in posterior positions of the occiput, often with remarkably good and quick results. The patient is allowed to stay on her back

* An article in this series by Miss Dearnley on the Treatment of Breech Presentations appeared in THE LANCET of Sept. 27th.

until the head is crowned, and in some cases until it is born. In other cases the squatting position is assumed for a time, after the beginning of the second stage, with good results.

In a small proportion of cases, where there is no disproportion, and where the uterine forces are good, the child is born spontaneously as a face to pubes. If care is taken, there is no need to get more than a small tear of the perineum, though as the larger occipito-frontal diameter distends the perineum there is greater distension of the perineum than normal, and consequently very great pain. A generous amount of anæsthetic is necessary for the relief of pain and also for the prevention of a tear. If a posterior position is suspected, an anæsthetist should be requisitioned early in the second stage of labour. Plenty of anæsthetic is of great use in the prevention of a tear. The head should not be born during a "pain."

As early rupture of the membranes is common and, in any case, as the labour has been long, it is especially important to be on the look-out for fœtal distress, and to listen to the fœtal heart frequently and to keep a record of the fœtal heart-rate. If there is any indication of fœtal distress in the second stage, it is advisable to be prepared to interfere quickly, and it is a wise precaution to have the forceps boiled and ready at the beginning of the second stage. Often the patient shows signs of exhaustion after a long first stage, and, in consequence, is incapable of bearing down efficiently in the second stage. Moreover, owing to fatigue, the uterine contractions may become less effective. These are definite indications for interference. It is of great advantage to wait until some moulding of the head has occurred, but the best moment for the application of forceps has to be decided on one's experience and good judgment. Each case must be dealt with on its merits. If the fœtal heart is not satisfactory, it can be improved by giving the mother a hypodermic injection of camphor in oil grs. 3 in 1 cc. before the application of forceps. This has an extremely good effect on the fœtal heart and can be repeated if necessary.

Technique of Manual Rotation.

The patient is anæsthetised as for an operation, the bladder is emptied by catheter, and a careful vaginal examination made to ascertain exactly how the head is lying. The head is then turned manually with the whole hand in the vagina. The right hand is used for an L.O.P. and the left hand for an R.O.P. The head is grasped and turned by the hand in the vagina, whilst the shoulder of the child is turned towards the midline by the other hand on the patient's abdomen, on which a sterile towel has been spread.

In some cases it is more effective to pass the hand in the vagina above the head, and grasp the shoulder and turn the shoulder and head by one movement towards the midline. However, in this manœuvre some difficulty may be found in turning the head, and in practically all cases the head is inadvertently pushed up to some extent out of the pelvis. Some authorities advise that after turning the head and shoulder the case should be left to nature; but in my experience there is a very great tendency for the head to rotate backwards again to its original position almost at once. Therefore it is much the safer method, where this amount of interference has been necessary, to put on forceps at once after rotation and deliver straight away. It is important in these cases to remember to put the forceps well up over the head, because the head is nearly always pushed up to some extent, and unless the forceps are applied rather higher than usual there is a tendency for them to slip off as soon as they are pulled on. I have frequently seen this happen, and am convinced that too low an application of the forceps is the chief cause of "slipped forceps" in such cases. In dealing with a right occipito-posterior position, after manual rotation and whilst still having the left hand in the vagina holding the head in position, it is a good plan to apply the right blade of the forceps before the head can slip back, and then to hold the right blade firmly in position whilst applying the left blade. It is of great assistance to have the patient lying on her back in the lithotomy position for rotation and application of forceps in posterior positions of the vertex.

Occasionally the head is so tightly jammed in the pelvis that manual rotation is impossible. In such a case, where no progress is being made, axis-traction forceps can be applied as accurately as possible to the fœtal head. After a few pulls the head rotates to some extent and comes down. The forceps are then taken off and reapplied accurately, and the head delivered as an anterior. In this way the possibility of damage to the child's head is greatly minimised.

It is possible to apply forceps to the head in the posterior position, and to deliver the child successfully in this position; but there is a great risk of damage to the head, and it is, moreover, almost impossible to avoid a bad tear of the perineum. Rotation of the head forcibly after application of forceps is very dangerous and is a practice to be condemned.

When the case is seen late in labour for the first time and the child is dead perforation is the correct treatment.

GERTRUDE DEARNLEY, M.D., B.S. Lond.,
Gynæcological Surgeon, Royal Free Hospital; Physician to Antenatal Department, Queen Charlotte's Maternity Hospital.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt.-Comdr. J. C. Brown to be Surg.-Comdr.
Surg. Lt. D. Duncan to be Surg. Lt.-Comdr.

ROYAL ARMY MEDICAL CORPS.

Col. R. B. Ainsworth, late R.A.M.C., to be Comdt. and Dir. of Studies, R.A. Med. Coll.

Lt.-Col. B. G. Patch, having attained the age for compulsory retirement, is placed on retd. pay.

Maj. (temp. Lt.-Col.) W. J. E. Bell to be Lt.-Col., vice Lt.-Col. B. G. Patch.

Maj. J. J. O'Keeffe to be temp. Lt.-Col.

Capt. F. Holmes to be Maj.

Capt. J. M. Pinkerton relinquishes his temp. commn. and is granted the rank of Maj.

ARMY RESERVE OF OFFICERS.

Capt. D. V. M. Adams, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

Lt. C. Wroth, from Reg. Army Res. of Off., R.A., to be Lt., retaining his present seniority.

ARMY DENTAL CORPS.

Capt. S. H. Woods to be Maj.

MILITIA.

Maj. F. L. Tulloch retires on attaining the age limit, and retains the rank of Maj.

TERRITORIAL ARMY.

Lts. H. R. Paterson, E. G. R. Grant, L. P. Marshall, E. J. G. Glass, and H. V. Morlock to be Capts.

J. R. Macdonald (late Offr. Cadet Serjt., Edin. Univ. Contgt., Sen. Div., O.T.C.) to be Lt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Capt. (Bt. Maj.) J. B. Orr and Capt. W. F. Wilson, having attained the age limit, relinquish their commns. and retain their rank.

The King has approved of the award of the Royal Naval Volunteer Reserve Officers' Decoration to Surg.-Comdr. W. C. Macartney.

SPECIAL ARTICLES

THE BOARD OF CONTROL AND THE MENTAL TREATMENT ACT, 1930.

THE new Mental Treatment Act comes into operation on Jan. 1st next and will bring with it many changes in the law and practice relating to the treatment of mental illness. The Board of Control has circulated a memorandum explaining the Act to local authorities and opportunities which it affords in order that they may consider in advance the steps they will take to meet the new era. The reproach that no public mental hospital could admit a person who applied for treatment is at last gone, but it has taken 30 years or more to remove such a glaring anomaly. The medical profession has urged this for years and will welcome the provision. There are other changes too which closely concern the practitioner in his daily work.

Voluntary Patients.

The first four sections of the Act introduce a new code for voluntary patients, and begin by substituting this term for the old "voluntary boarder." These patients are to be received in future into any institution within the meaning of the Act, so that they will no longer be restricted to registered hospitals and licensed houses. The local authority can fix terms and conditions as to payment in their own institution or can arrange for their voluntary patients to be taken in by an approved hospital or nursing home. They are urged to limit the charge to the lowest possible figure, as early treatment is a fundamentally economic proposition.

The Board explains that the voluntary patients will include two classes: the recent, who enter the institution voluntarily and those who choose to stay on after being released from certificate. Among the voluntary patients of the future, however, there will be an increasing number with symptoms so mild or incipient that they would not in the past have been admissible to mental hospitals. These are the people who are likely to be sensitive to or critical of their surroundings and to suffer if they find themselves among acute or restless cases. For these there should be an admission block where they can be thoroughly examined, and a convalescent block where they can receive ambulatory treatment. The Board urges the provision of these blocks where they are not already available. There is also the important possibility of treating these cases in the local general hospital, and the Board is anxious that local authorities should make contracts to this effect whenever possible, ensuring at the same time that the staff of the mental hospital is concerned in the care of mental patients.

While adult voluntary patients can be received without any formality other than a written application to the medical superintendent, children under 16 can now also be admitted on the application of a parent or guardian, supported by a medical recommendation from the family doctor or an approved practitioner.

The reception and departure or death of voluntary patients are to be notified to the Board. A voluntary patient can leave hospital on 72 hours' notice in writing to the person in charge; in the case of a child the notice is given by the parent or guardian. He must be discharged or certified within 28 days if he becomes and remains incapable of expressing his volition. On general grounds it is undesirable to certify any patient in the institution which he entered voluntarily, and he should be removed if possible. If the parent or guardian of a minor fails to fulfil his duties as such, the Board is to be notified. A Commissioner may visit a voluntary patient at any time and order his discharge or removal unless placed under certificate.

Temporary Patients.

The temporary patient is the person who is "suffering from mental illness and is likely to benefit by temporary treatment, but is for the time being incapable of expressing himself as willing or unwilling to receive such treatment." This is new to English law. Section 5 provides for the treatment of these patients without the certificate which has hitherto been necessary, and the procedure does not involve any magisterial order. The principal document is an application in a prescribed form which must be made, if possible, by the husband or wife or by a relative, or—at their request—by a duly authorised officer of the local authority in the area. If it is made by any other person the reason must be given. Local authorities must authorise officers to act under this section when required. The application is to be supported by a medical recommendation in prescribed form, signed by two doctors, one a practitioner approved by the Board of Control and the other, if possible, the usual medical attendant of the patient. These requirements are important, for they affect the validity of the patient's application. The Act also provides for the examination of the patient and for the lapse of the recommendation after a certain period.

The temporary patient can be received into any public and registered mental hospital or into any licensed house, hospital, or home approved by the Board, or, with its consent into single care. Once again the local authorities will have to consider whether the accommodation at their disposal is suitable for these patients. The Act contemplates the possibility of differentiating them from the certified, although as a class they are people who would in the past have come under certification in many cases.

As soon as the temporary patient is received, notice must be sent to the Board of Control and to the clerk of the Visiting Committee or of the Visitors of Licensed Houses, as the case may be, and similar notice must be sent on departure or death. Temporary patients are to be visited within a month of their reception by two member of the visiting committee or two visitors of licensed houses. The visitors must sign a statement approving the detention of the patient, or else send a report to the Board of Control. This visitation will be undertaken by the Board in the places within its immediate jurisdiction —i.e., within seven miles of London, Westminster, and Southwark. A maximum period of six months is allowed for the treatment of temporary patients, but if recovery seems imminent at the end of that time the period can be extended for further periods not exceeding six months in all by direction of the Board of Control. A temporary patient must be discharged within 28 days if he becomes and remains capable of expressing himself as willing or unwilling to continue treatment. The Board of Control may direct that he be discharged or dealt with under the

principal Act at any time. The estates of temporary patients may receive the protection of the Judge in Lunacy in the same way as do those of certified patients.

It will be possible in future for a large number of acute and recent cases of mental disorder to be treated for recovery without certification. This promises to mean much for many persons and we hope will help to remove the stigma attaching to insanity. Many patients suffering from puerperal or toxic mental disorder will in future be treated to recovery without being formally certified as insane.

Powers and Duties of Local Authorities.

Among the new powers given to local authorities by this Act are those of providing out-patient clinics and after-care; undertaking research, contributing to the funds of voluntary associations formed to prevent and treat mental disorder, and making agreements with other local authorities for coöperation in measures for mental health. The exercise of these powers (except that relating to research) does not require the approval of the Board of Control, but it will be very useful if local authorities making such joint agreements will keep the Board informed. The out-patient clinics can be organised at the mental hospital if desired, but the circular suggests that there are great advantages in arranging it at the general hospital wherever one is accessible. It is important, however, that the medical staff of the mental hospital should be associated with the staff of the general hospital in running the clinic. The Board hopes that they will be informed of arrangements made, and provided with periodic reports of the work carried out. The success of the out-patient clinic must depend on the use made of it by the public, and this calls for propaganda work. Local authorities are urged to consider how best to disseminate information concerning the new facilities available next year. The power to undertake research and contribute financially towards research work in relation to mental illness is subject to the approval of the Board of Control. This provision is designed to obviate overlapping and to ensure the focusing and further development of individual researches. Under the new Act local authorities will have the same powers as to provision, equipment, and maintenance of hospitals, acquisition of land and borrowing of money, and appointment of staffs as they had under the original Act.

Visiting Committees and Supervising Medical Officers.

Every local authority must appoint annually a visiting committee of not less than seven members to exercise the powers conferred by the various Acts, with the exception of the powers of raising a rate or borrowing money. This now applies to every local authority, whether they have a mental hospital or not. This committee can appoint subcommittees as they think fit and, if they have more than one mental hospital under their charge, they must appoint a subcommittee for each. The committee may coöpt persons who are not members of the local authority up to one-third of their total number. The Minister of Health still has the power given him by the Mental Deficiency Act, 1913, to authorise a local authority to appoint their mental deficiency committee to be the visiting committee. Two members of every visiting committee must be women, and one member of every subcommittee appointed for an institution must be a woman. When a separate visiting committee is appointed for an institution under an agreement to unite, one at least of the members appointed by each local authority which appoints three or more members must be a woman.

Local authorities which have two or more mental hospitals may appoint a supervising medical officer to have general supervision over all of them. Each must have a resident medical superintendent in immediate charge, and the supervising officer may be—but need not be—one of the medical superintendents. The relations between the medical officers are to be regulated by the local authority with the approval of the Board of Control. This section is purely permissive.

Board of Control.

The Board of Control is reorganised by this Act and is to consist of a chairman and four senior commissioners. A section of the Act removes a difficulty which has militated against the transfer of officers from the service of local authorities to that of the Board by preserving continuity of services for the purpose of superannuation. Any visitation or other act required or authorised to be carried out by the Board or by a commissioner may, at the discretion of the Board, be carried out by one or more commissioners or one or more inspectors. To avoid central duplication of work, certain powers and duties now vested in the Minister of Health are transferred to the Board. These include the approval of contracts to unite for providing mental hospital accommodation, or contracts made with councils of county boroughs for the reception of rate-aided persons—variations of agreements, plans and estimates, and dissolution of agreements. After Jan. 1st, therefore, local authorities must apply to the Board of Control for approval of their plans and contracts. Application for sanction for borrowing money must, however, be made to the Minister of Health as heretofore.

The Board is empowered to make rules for such matters as books and records to be kept and notices to be sent, and for application of the provisions of the Act to patients and institutions, and for the prescription of evidence required for an extension of the treatment of temporary patients.

In connexion with the approval of practitioners for the purpose of giving recommendations under Sections 1 (2) and 5 (3) of the Act, the Board of Control has appointed a committee of medical men under the chairmanship of Sir John Rose Bradford to advise as to the principles upon which approval should be given.

Varia.

In future the urgency certificate can be applied to rate-aided as well as to private patients, so that urgent poor cases need not be removed to the workhouse but can go direct to a mental hospital. The urgency order must be signed by a duly authorised officer of the local authority and must be accompanied by the medical certificate and statement of particulars, as in the past. The authorised officer can, therefore, arrange for the removal of a rate-aided patient direct to the mental hospital without a justices' order.

The new Act affords further protection to certifying practitioners. The onus of proof of good faith and reasonable care is transferred from the defendant to the plaintiff, so that an action will not lie unless the defendant has acted in bad faith or without reasonable care. Moreover, the plaintiff must take out a summons for leave to proceed before he can commence his action, and such leave will not be given unless the Court is satisfied that there is substantial

ground for an action. In the past the plaintiff has been free to bring an action unless the defendant took out a summons to stay. Application for leave to proceed is to be treated as the commencement of the proceedings in any case in which proceedings are commenced within four weeks after the date on which leave to proceed has been given. This section is already in operation, having come into force on July 10th last.

The final separation of the mental from the poor-law patient is made by Section 18, which declares that a person shall not be deemed to be in receipt of poor relief, or to be deprived of any right or privilege, or to be subjected to any disability by reason only that he or any member of his family is being maintained as a rate-aided patient under the Lunacy Act or the present Act. This does not affect the administration of pensions under the Widows', Orphans', and Old Age Pensions Act, 1929, the settlement or chargeability of a patient, the power to recover these expenses, or the repayment of maintenance expenses from any pension granted under any Royal Warrant or Order in Council, or under the Pensions Act, 1839. This section also came into operation on July 10th last.

The important changes in terminology in this Act include the substitution of the term "mental hospital" for "asylum" of "rate-aided person" or "rate-aided patient" for "pauper," and the elimination of the word "lunatic."

Summary.

The Board points out that the Act marks a great and striking advance in the law governing the treatment of mental illness.

The main principles of the Act are summarised by the Board as follows: 1. The preventive treatment of incipient mental illness by the provision of out-patient clinics and extended facilities for voluntary treatment. 2. A further advance in assimilating the treatment of mental illness to that of other forms of illness (*a*) by provisions under which certain cases may be temporarily placed under care and treatment without "certification" and (*b*) by the opportunities afforded of associating the general hospitals (municipal and voluntary) in the treatment of mental illness. 3. Extended provision for after-care and for systematised research into mental illness. 4. Dissociation of the treatment of mental illness from the poor-law. 5. Various important alterations in terminology reflecting the more enlightened view now taken in regard to mental illness.

Perspective view of the new buildings when completed.

LORD MAYOR TRELOAR'S CRIPPLES' HOSPITAL AND COLLEGE.

REBUILDING OF THE HOSPITAL.

THE foundation-stone of the new buildings was laid with Masonic ceremonial by Lord Ampthill just a year ago. The first of the five new blocks is now ready for occupation and the second block is under construction. The perspective view which we reproduce shows the buildings as they will appear on completion.

The existing wards are the timber structures remaining from the Princess Louise Military Hospital for troops returning from the South African War, and have been in use for just short of thirty years. The work of the hospital is going on without interruption during the period of rebuilding, as the scheme allows of the use of existing buildings until new ones are provided to take their place. Experience has proved the convenience of a unit of some size, both from the nursing and administrative points of view, and there will be five ward blocks of 60 beds each, making 300 beds in all.

These wards have all been planned with a southern aspect on a continuous terrace at the same level. The terrace will be 984 feet long and 25 feet wide, with sloping ways and steps leading to the ground, thus affording unrivalled facilities for sun treatment.

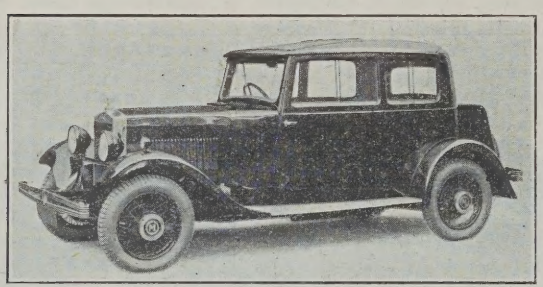
Each ward unit of 60 beds consists of two wards of 24 beds each, two wards of four beds each, and four cubicles, with the sister's office centrally placed for supervision. On the north side there is a sanitary spur at each end, with an administrative block in the centre, containing a ward kitchen, storeroom, and surgery. The southern front of the 24-bed wards will be fitted with folding doors which will enable each ward to be turned into an open-air gallery, while along the south front for a length of 136 feet will be a glass-roofed verandah, 10 feet wide, glazed with vita-glass, and designed so that one-half of it will slide, to afford protection in showery weather. On the north side the whole of the ward blocks are connected by a covered way.

THE OLYMPIA MOTOR SHOW.

DEVELOPMENTS IN 1931 MODELS.

In this year's show, from the mechanical point of view, certain changes and tendencies are noteworthy. The greatest developments have been in gear-box and transmission systems. A few years ago the public made a fetish of top gear performance, and manufacturers were obliged to listen to the clamour. Engines became larger, cylinders were multiplied, and top gears became lower and lower. This was undoubtedly a retrograde step, for although cars would climb slopes of 1 in 12 or more at a reasonable speed in top gear, it was impossible to take advantage of a favourable wind or a downhill slope without the engine speed becoming excessive. The demand for top gear performance was caused by the difficulty of downward gear-changes; this year the manufacturers have gone to the root of the trouble and a special feature is being made of gear-boxes in which the change from top to third is made extremely easy. Salesmen no longer regard the gear-lever as an unmentionable necessity, but proclaim that it is

FIG. 1.



Morris Oxford (Six) Coupé.

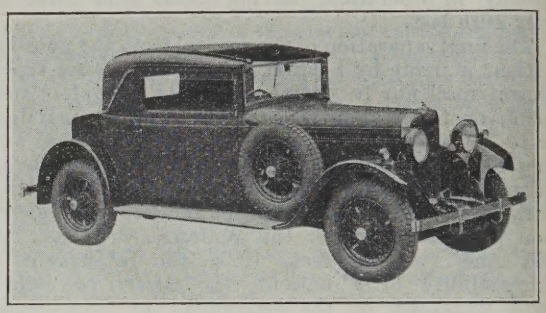
there to be used. This has been accomplished in a variety of ways which it is unnecessary to specify here; the result is excellent. Gear changes nowadays really are simple, and in many cases the third gear is not much more noisy than top. Thus, the third may be used continuously in traffic and the top ratio may safely be made higher and engine speed reduced. A few firms are more ambitious. The Mercedes-Benz multi-range gear-box consists of a small semi-automatic two-speed gear-box in addition to the normal three-speed, giving six speeds in all. Daimler and Armstrong-Siddeley have small quadrants on the steering-wheel by which the required gear may be pre-selected, and the actual change of gear does not take place until the clutch pedal is depressed.

A SELF-CHANGING GEAR-BOX.

In the Armstrong-Siddeley self-changing gear-box, all gear wheels are permanently in mesh. Each indirect gear is obtained by applying a band brake of special form to one of four drums. By moving the lever on the steering column head a gear may be selected in advance for subsequent use and engaged when required by depressing and releasing the clutch pedal, irrespective of the state of the gear when the selection is made. It is impossible for two gears to be selected or engaged simultaneously.

Arrangement of the Epicyclic Gears.—The arrangement of the gear is shown in Fig. 5. The elements have here been spread out and the number of planet pinions in each gear has been reduced to two for the sake of clearness. The reverse train R may be ignored. The essential driven member is the cage O_1 carrying the planets of the first gear train. The sun wheel of this train S_1 is integral with the engine shaft. If the annulus A_1 is brought to rest by a brake (the other brakes being free) the gear ratio is that of the train S_1—A_1, 3·67 to 1 direct. This is first speed.

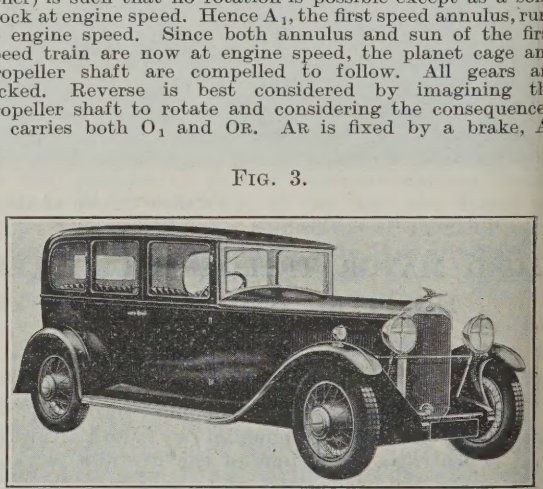
FIG. 2.



Talbot "75" Sunshine Coupé.

In order to understand the change to second speed we may imagine that the brake on A_1 is released and that on A_2 is applied. The sun wheel of this train S_2 is also integral with the engine shaft. The planet cage O_2 then rotates at a fraction of the speed of the engine in the same direction. It carries with it the annulus A_1 to which it is permanently connected. The result is to increase the speed of the planet cage O_1 thus giving a higher gear—actually 2·27 to 1, second speed. Third speed is more involved. The third speed epicyclic train is coupled to the second as shown—annulus A_3 to planet cage O_2, and annulus A_2 to planet cage O_3. The brakes on A_1 and A_2 are released and that on the drum B_3 to which the sun wheel S_3 is fixed is applied. The result is a gear reduction of 1·46 to 1, third speed. For fourth (direct) speed all the band brakes are released and the clutch C_3 (integral with S_3) is engaged with C_4 (integral with the engine shaft). Thus S_3, S_2, and S_1 are now all three running at engine speed. The inter-connexion between the second and third trains (annulus of each to planet cage of the other) is such that no rotation is possible except as a solid block at engine speed. Hence A_1, the first speed annulus, runs at engine speed. Since both annulus and sun of the first speed train are now at engine speed, the planet cage and propeller shaft are compelled to follow. All gears are locked. Reverse is best considered by imagining the propeller shaft to rotate and considering the consequences. It carries both O_1 and OR. AR is fixed by a brake, A_1

FIG. 3.



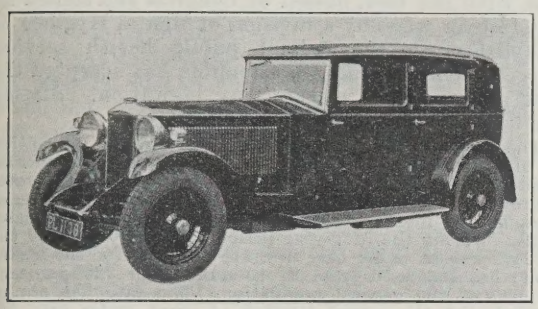
Humber "Snipe" Saloon (Fixed Head).

is free, but coupled to SR. Hence SR, carrying with it A_1, advances in the same direction as the propeller shaft at a faster speed. Thus the annulus A_1 overtakes the planet cage O_1, resulting in S_1 (the engine shaft) rotating in the reverse direction.

From the above explanation, together with an inspection of the sketch, it will be gathered that whenever the engine is running all the gears are in relative motion (excepting when the fourth speed clutch is engaged, when the gear is "solid.") In no case, however, are all gears simultaneously

transmitting power—i.e., some are always running idly. In particular, on first speed only the first gear train is transmitting power; on second speed, the first and second trains; on third speed the first,

FIG. 4.



The Mulliner-bodied Invicta.

second, and third; and on reverse, the first and reverse trains.

Other mechanical details are of less importance. Attention is being paid to improvements in suspension systems, but these are mostly shock absorbers and rebound dampers which are designed mainly to overcome the inherent unsuitability of the leaf spring. Brakes are improved by the addition of servo motors or hydraulic systems of operation, chassis, on the whole, are lower, and there are many different kinds of unsplinterable glass available.

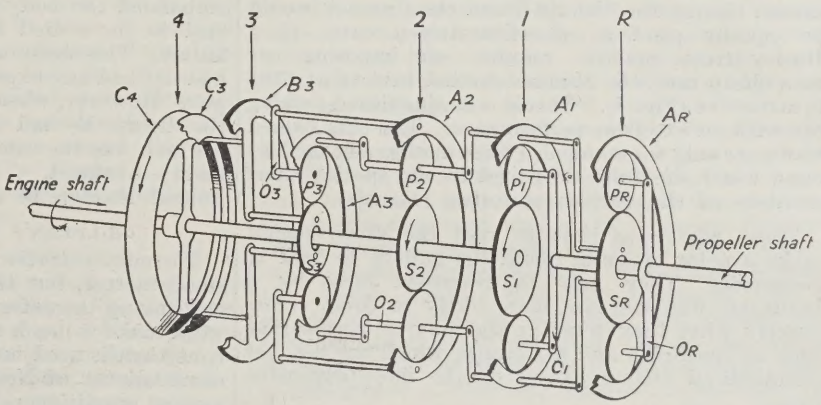
THE PRACTITIONER'S REQUIREMENTS.

In cars for the use of the medical profession the essential features are: reliability, easy starting, weather protection, economy and ease of upkeep, silence, smoothness, and ease of control. Reliability is, of course, the most important of these features, and, fortunately, most cars nowadays are reliable. In order to be quite safe the doctor should choose a model which has been in the hands of the public for a year or more, or a new model only from an established maker with a reputation to lose.

Easy starting is very closely connected with the question of quick warming up. Most cars supply heat to the induction system in one way or another. Exhaust heat is probably preferable to a water jacket as the warm-up is quicker and the engine will pull almost as soon as it is started. Thermostatically controlled radiator shutters are now fitted in large numbers and are reliable. Radiator muffs are adequate, but with constant stopping and starting it is easy to forget to adjust the flap. Thermostatic shutters are automatic and look after themselves. Several electric immersion heaters are, moreover, available. These can be plugged into the base of the radiator and keep the engine warm in a cold garage.

Weather protection is a question which has been debated endlessly, but it now seems that the open four-seater is almost dead. The examples at the show are almost all on sports chassis, and here the back seats are generally used as a luggage compartment. All-weather two-seaters are few. The hoods are generally very ugly when lowered, and there are many hinged joints and clip fittings which tend to rattle when the car ages. In theory the all-weather hood is ideal, but in practice it is almost always kept closed from one year's end to the other. In our climate days in which the weather is doubtful are far more numerous than brilliantly fine ones, and it is unreasonable to expect anyone to lower a complicated and finger-pinching hood when there may be a shower within the next twenty minutes. Tickford hoods, which may be wound up and down in a few minutes, are very convenient, but have the disadvantage that the hood piles high when down and sometimes makes it impossible for a driver who wants to back to do so without first getting out to ascertain whether any obstruction is immediately behind him. Probably the best compromise is a saloon or coupé with a sliding roof. These bodies are available on nearly every chassis, and any existing car can be fitted with a sliding roof at a cost of £7 to £10. These roofs can easily be slid back with one hand by the driver, and it is possible to take advantage of gaps between the showers. No complaints seem to be made about leakage so one may assume that the junctions are watertight. It is difficult to decide between the relative merits of the saloon and coupé body. The saloon is roomy and will take five people in comfort, but as the doctor's car will mostly only have one passenger, the coupé is probably the most convenient. An excellent example of this type of body is shown on the Talbot "Seventy-five" chassis. There is room for three medium-sized people on the wide front seat, and there are two occasional seats at the back. In addition to this there is a large trunk and luggage grid.

FIG. 5.



The arrangement of a self-changing gear shown in diagrammatic form.

In closed bodies efforts are being made to improve *ventilation*. Glass louvres are fitted at the top of the windows, and these admit air while keeping out rain. Gear and brake levers are frequently fitted with leather "trousers" to exclude draughts, and pedal slots have spring-backed washers to prevent the ingress of fumes from the engine.

Economy.—Whatever the design, cars of the same engine size will use about the same amount of petrol, but mileage per gallon depends more on the way a car is driven than on anything else; frequent stopping and starting always increases consumption, though the radiator shutters mentioned above are a great help.

Ease of upkeep is improved by rubber bushings which need no oil, and the "one shot" systems which lubricate all the chassis bearings by depressing a spring-loaded pump. These last now incorporate metering devices which ensure that one bearing shall not be starved at the expense of another.

Silence and smoothness are helped by the gear-boxes and rubber bushings mentioned above, and the popularity of six-cylinders at the expense of four makes for smoother running.

Ease of control is a point which, up to now, has not received the attention which it deserves. Nothing is more annoying than having to fumble for a minute switch with a heavily-gloved hand. Sitting back comfortably in the driving seat it should be possible to reach all the controls without moving the shoulders. This ideal is gradually being realised. Gear levers have been lengthened until they come up near the wheel and the hand drops naturally on to them. Lighting, ignition, and throttle controls are in a neat switchbox above the wheel in many models.

CARS WORTH LOOKING AT.

A doctor who has delayed his visit until the last two days of the show, which closes to-morrow (Saturday), will not be able to see more than a few of the stands. If he has no special well-tried friends to visit he may make some, giving attention to those on the following list, classified according to price.

Up to £250.—M.G. Coupé, £245; Citroën Six, £235; Standard Nine, £225.
Up to £400.—Talbot, £395; Austin Six, £335; Fiat, £381; Morris Oxford (Six) Coupé, £285 (Fig.1).
Up to £550.—Talbot Coupé, £545 (Fig. 2); Crossley, £545; Vauxhall, £495; Humber, £485 (Fig. 3).

With the exception of the coupés, all the cars in this list are full saloons. They are all by established makers, and are eminently suitable for the owner-driver, though the Vauxhall and the Crossley would be equally good as chauffeur-driven cars. If a Harley-street practice requires an imposing car at a cheap rate, the Mulliner-bodied Invicta at £765 is attractive (Fig. 4). This is a distinguished-looking car with an excellent performance. The cars named above are only a few among a large number of excellent ones, which are fully described in the special show numbers of the various motoring journals.

Those who have time to visit the show should make a point of going round the gallery to look at accessories. They may be rewarded only by a headache, but they are more likely to come across exactly what they want in the way of accessories, such as spotlights and fog lamps, which are not yet standardised fittings except on the more expensive cars.

A new feature of the show is the Marine Motoring Section in the Empire Hall, and there is also a collection of cars of 20 years ago which does more to illustrate progress than do all the pony-skin trunks and cocktail sets of the £3000 class.

LIVERPOOL'S MILK-SUPPLY.—The Liverpool Health Committee have decided to call a conference of the authorities of all areas receiving Cheshire milk with a view to considering the question of a joint protest being made as to the method of examining dairy farms by the Cheshire County Council. It is urged that there should be routine veterinary inspection of cows by whole-time officers. Cheshire has about 3000 farms, and it is contended that the examination of only 100 samples of milk per annum does not meet the County Council's obligations in the matter.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

THE PUBLIC HEALTH SERVICE ADOPTS MENTAL HYGIENE.

A BILL has been passed by Congress and signed by Mr. Hoover whereby a division of Mental Hygiene is established in the federal public health service. Surgeon-General Hugh S. Cumming has accepted the new responsibility without any hesitation. Stating the need for such a division, he says:—

> The necessity for directing efforts toward the prevention of mental disorders, toward the conservation of mental health and toward the amelioration of adverse mental states is brought to our attention by the ever-increasing number of persons with mental disorders seeking aid in public institutions. During the fifty-year period from 1880 to 1930 the rate of persons under care in State hospitals for the insane alone has increased from 81 to more than 220 per each 100,000 of the general population. The rate has almost trebled, but the actual number of cases under care has increased to almost six times the number under care in 1880.

The new division's duties will be concerned with administration as well as with research. It will have charge of two farms, recently authorised by Congress for the treatment of persons addicted to the use of habit-forming drugs. Another important function will be the development of psychiatric services in the federal prisons.

VACCINATION RECOMMENDED TO UNDERTAKERS.

In an address given by invitation to the New York State Funeral Directors Association, the State epidemiologist, Dr. H. Jackson Davis, had some harrowing tales to tell of the risk that undertakers run from bodies infected by unrecognised small-pox. A Canadian corpse, he says, was responsible for an epidemic that resulted in 21 deaths. More than 50,000 people were vaccinated in the space of ten days and that epidemic was checked. Another outbreak was traced to an undertaker's assistant who had embalmed the body of a man of 74 years who was said to have died from kidney disease and heart failure. This assistant had never been vaccinated and had not had any experience of the exanthem of small-pox. However, when he himself fell seriously ill from the disease he had no difficulty in recognising that his rash was the same as that on the body which he had embalmed. Dr. Davis recommends that funeral directors be vaccinated every three years.

CHILDREN'S HOUR AT THE SURGERY.

The administration of a dose of toxoid is in itself a small matter, but the preparation therefor and the clearing up thereafter and the interference with other work make it much more extravagant of the doctor's time than it need be. So, at least, thinks the health commissioner of New York City, who proposes that general practitioners set aside a portion of one day in every week to be known as "children's hour." At this time children may be examined and receive various tests and prophylactic treatments. The commissioner suggests that the doctor should print cards describing the services offered, the time of the children's hour, and the fees for such standard treatment as vaccination or the administration of toxoid. This would, he hopes, increase the amount of prophylactic work done and encourage many mothers who now take their children to the public clinic, fearing that they could not afford private treatment, to go for such service to their own doctor instead.

GOVERNMENT CONTROL OF PATENT MEDICINE LABELS.

The authority vested in the federal government by virtue of the Pure Food and Drugs Act is exercised

actively by the Food, Drug, and Insecticide administration, an account of whose achievements may be found in their annual report. Manufacturers of standard pharmaceutical preparations are given credit for having voluntarily changed the names of many of their products, so that preparations that formerly were named "heart remedy," "liver stimulant," "indigestion tablets," &c., are now so labelled that their composition rather than their possible use is brought to the purchaser's attention. A special campaign was directed against a large variety of preparations brought into existence by the last influenza epidemic. Menthol inhalers, tablets containing various antipyretics, laxatives, gargles, even cubeb cigarettes, were labelled in such a way as to claim that they were an effective treatment for influenza. Legal action was taken in many instances with good effect. An attempt to exploit popular interest in vitamins by the sale of extracts of cod-liver oil, which, however, are without medicinal value, has also called for the attention of this bureau. It is probable, that, following a recent investigation by a Committee of the Senate, the resources of this administration will shortly be increased.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

MENTAL WORK AND BLOOD PRESSURE.

Dr. Fischer has inquired into the influence of mental work on blood pressure. He chose for his research 16 members of a chess congress who played three times a week from 6.30 to 10.30 P.M. Before the session and immediately after it ended the blood pressure in the brachial artery was measured. In 27 out of 48 measurements the blood pressure was unchanged or had decreased; in 15 cases there was an increase of 10 mm. Hg or less, and in only 6 cases an increase from 11 to 30 mm. It appeared that the increase was due to emotion during the play, especially in those who had lost time and according to the rules of the match were compelled to play quickly without time to consider their moves thoroughly. No difference was noted between smokers and non-smokers. In Fischer's opinion mental effort does not influence blood pressure; the important factor is emotion.

NECROPSY WITHOUT PERMISSION.

The head of a medical university clinic was recently prosecuted because he performed a post-mortem examination in face of the relatives' express request that he should not do so. The prosecution was for damage to property. The local court gave a verdict of not guilty because the defendant gave evidence that he did not know that the relatives had protested against a necropsy. On appeal of the public prosecutor the High Court confirmed the verdict. The court stated in their judgment that a prosecution for damage to property was impossible because a corpse was not a thing which could be damaged. This would be in contradiction with the feelings of the people. A corpse destined for burial was nobody's property, and the defendant would not have been guilty even if he had known that the relatives objected.

INCREASE OF THROMBOSIS.

Prof. Ludwig Nürnberger, head of the gynæcological Clinic of Halle University, has been studying the alleged increase of embolism and thrombosis. By comparing the statistical records of different pathological institutes and medical, surgical, and gynæcological clinics, he reaches the conclusion that the increase of thrombosis during recent years is not so great that it cannot be explained by chance. Some dissectors—for instance those especially interested in thrombosis—pay more attention to the condition than others. Sometimes, however, the increase is so great that it can be explained only by an abnormal condition. Some authors are of opinion that intravenous injection is responsible, but further clinical observations are necessary to decide the facts. The statistical records do not show clearly whether the increase is real or imaginary. Embolism has increased in the same proportion as thrombosis.

TRAINING OF SCHOOL MEDICAL OFFICERS.

The German Pædiatric Association discussed at their recent meeting the position and training of school medical officers. They point out that the schools as a national institution have not only to train the pupils but also to prevent damage during school life. The appointment of school medical officers should thus be more and more insisted upon. The medical officer should alone control questions of hygiene; he must be a member of the school board and a room must be set at his disposal for his work. To become a school medical officer a training of at least two years in pædiatrics is necessary. Apart from general pædiatrics a school medical officer should attend a course in school hygiene, where the combating of epidemics, the psychology and psychopathology of children, and the physiology of bodily exercise must be taught. Those appointed to the post should have an opportunity of following the progress of science by special post-graduate courses.

TREATMENT OF GRAVES'S DISEASE BY BLOOD INJECTION.

Prof. His has reported to the Verein für Innere Medicine on his experience with injections of sheep's blood as recommended by Prof. Bier for Graves's disease. He stated that he had treated 18 cases without any other remedy. The patients got intramuscular injections of 5 c.cm. of sheep's blood and then alternately the blood of sheep and of cattle. The cases were of medium severity. No undesirable accident was observed, except in one case, a general erythema with swelling of lymph glands. In one case the general state was considerably improved and the weight increased but in the others no influence on the general condition was observed. The frequency of the pulse was variable but a remarkable decrease was never noted. Prof. His concluded that in no case a real cure was obtained. Dr. Zimmer said that he had treated 120 cases. In the first series, including the severest cases, the average basal metabolism of +74 per cent. decreased by one third, the frequency of the pulse decreased from 120 to 89, and the weight increased by two kilogrammes. In the second series, including cases of medium severity, the average basal metabolism of +42 per cent. decreased by one half, while the pulse-rate fell from 102 to 85. In the third series, including slight cases, the basal metabolism of +15–29 per cent. decreased by a quarter to a tenth; the pulse-rate fell from 95 to 80 whilst the weight rose by 6 kilogrammes. The general state and vegetative troubles such as excessive perspiration, tremor, and falling out of hair became better. Neither the swelling of the thyroid gland nor the severe toxic heart symptoms were reduced.

PROFESSIONAL SECRECY AND THE REVENUE AUTHORITIES.

A medical man was asked to show his books because the Revenue Office doubted whether his statements

concerning his income were correct. He only showed to them a notebook, but the Revenue Office wished to see the original books where the names of the patients were recorded. He declined to do so and eventually destroyed the books. The Revenue Office accordingly assessed his income at a very high figure, and on appeal the Supreme Court of Tax Appeals gave a judgment that the office was entitled to do so because the medical man by destroying his books had made it impossible to them to ascertain his income. The action of the Revenue Office was thus legal and the procedure of the plaintiff illegal although he had alleged that professional secrecy might be broken by allowing the revenue officials to inspect his books.

WHITE ERYSIPELAS.

Dr. Samberger describes in the *Dermatologische Wochenschrift* a variety of erysipelas without the characteristic red colour of erysipelas. He calls it white erysipelas. In erysipelas the toxin of the microbes produces a lymphatic œdema by hypersecretion of lymph. If the strong toxicity of the streptococci or an increased irritability of the lymphatic vessels has produced excessive œdema the hyperæmia of the capillary vessels is covered by it. Instead of the ordinary red colour the skin then assumes a pale white hue with marked margin, which slowly creeps into the surrounding skin. Although the general symptoms are the same as in red erysipelas the diagnosis is sometimes difficult owing to absence of the red colour.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

AUTUMN CONFERENCES.

OCTOBER has been a busy month for conferences, although Paris was afforded some relief by holding the Congrès de Médecine Française at Liége. For the first time there has been a meeting of plastic (we call them æsthetic) surgeons, a branch of surgery which is taking a wide place in this country and has excellent work to show. Photographs, casts, and implements were an interesting feature of this meeting at which the principal speakers were Drs. Bourguet, Dartigues, Claoué, Peytoureau, and Stefani.

THE MEDICAL CONGRESS.

At Liége three principal topics held the field. Hyperthyroidism was opened by Labbé, Azerad and Dreyfus for the clinical part, by Dautrebande (Brussels) on the physiological side, by Bérard and Peycelon (Lyon) from the surgical point of view. The discussion which followed may be briefly summarised thus. Under the influence mainly of American surgeons there is a large movement towards surgical treatment, more and more in the direction of special surgery with long medical preparation and elaborate technique. X rays have many advocates; the question of iodine is far from decided. It seems that a certain eclecticism, amounting almost to pragmatism, is the rule among physicians who deal with thyroid patients. There is a fashion to use the prefixes hyper, dys, and hypo, the old names of Basedow, Graves, and myxœdema being held uncouth and lacking scientific smartness. The second topic was the use of insulin, with a review of all the possible conditions in which it may advantage the patient or the surgeon. No definite progress was registered and a more limited discussion might have been more useful for practical purposes. Calcium metabolism, the third and far the most interesting topic, was presented in a splendid report from Prof. Mouriquand (Lyon) on the present position. We know hardly anything, he said, of the principles that enable the organism to retain or to expel calcium; while we are wiser than ten years ago we are no wiser than 50 years ago, for medicine has simply rediscovered the cod-liver oil that was for a time so light-heartedly despised by clever people. The conclusion of the whole discussion was that all calcium preparations are hypothetical, sunlight and cod-liver oil remaining the champions of recalcification.

THE SURGICAL CONGRESS.

The annual meeting of French surgeons is always a lively occasion. It marks the beginning of the school year and coincides with the annual motor show which is, cynics say, the main reason of its success. Over this year's opening ceremony presided the great French novelist, Paul Bourget, a man whose literary career has been one long flirtation with medicine. His address was the story of that broken love and of the need of intellectual discipline in surgical work. Dr. Maurice Auvray spoke from the chair on the necessity for special practitioners of anæsthesia. Of the reports, one by Dr. Brocq (Paris) on hæmorrhagic pancreatitis, although a fine piece of work, was imperfectly discussed as hardly anyone present knew much about this chapter of pathology. MM. Trölich (Nancy) and Mouchet (Paris) reported on traumatic spondylitis, known in this country as the disease of Kümmel-Verneuil, which led to a good discussion, although little new was brought forward. The preparation of the patient for surgical operation was set out by Lambret (Lille), and Sauvé (Paris). From their report of the discussion which followed, it may be inferred that medical study of the patient before operation is the growing point in modern surgery; every day the help of the laboratory and of physiological thinking counts for more. Minute exploration of all the organs leads up to the evaluation of the functional capacity of the organism. Obviously the sum-total of such demands cannot be met in ordinary private practice, a fact which may lead to the birth of a new kind of specialist whose function it is to evaluate the vital capacity of the patient for operation, to control his diet and his preliminary treatment, and even perform accessory operations that may bring him to the operating table with the best chances of success. In this direction rather than in new technique or in individual skilfulness and celerity are better statistics to be looked for. Prophylactic vaccination has many supporters, although they do not agree on what to vaccinate against or what to vaccinate with.

SAFETY FIRST IN OPERATING.

Louis Sauvé drew attention to the fact that by the terms of reference to the subject under discussion he was prevented from dealing with the special problem of infection. Yet this was the most new and probably the most interesting chapter at the present time in the whole question of preparing a patient for operation, whether it be by vaccination, serotherapy, immuno-transfusion, or bacteriophage. With regard to blood transfusion, he noted that, at the meeting of 1924, one of the principal speakers, Pauchet, had advocated transfusion of untreated blood, while the other principal speaker, Jeanbrau, had remained faithful to citrated blood. Since then the general tendency had been in favour of untreated blood, although the harmlessness of citrated blood under ordinary conditions remained unchallenged. Since 1924 various more or less artificial sera have been recommended, but have not been able to change

the fact that, once hæmorrhage has reached a certain limit, the only procedure which will save the patient is the transfusion of fresh blood. The realisation of the truth of this teaching has led to the creation of blood transfusion centres, the best organised of which is to be found at Prof. Gosset's department in the Salpêtrière. The speaker concluded with the prophecy that, at an age when operative technique has become so perfect and the property of many, the future is no longer to the surgeon who performs miracles of operative dexterity, but to him who knows how to foresee the risks his patient will run.

INFORMATION BUREAU FOR THE FOREIGN DOCTOR.

It is probable that few foreign doctors visiting Paris realise that a bureau is provided specially for them. It is known as the Bureau des Relations Médicales avec l'Etranger, and it is to be found in the Salle Béclard, at the Faculté de Médecine. It is open from 9–11 in the morning and from 2–5 in the afternoon, Saturday afternoons excepted—a concession, no doubt, to the *semaine anglaise*, the recreational facilities of which are being more and more appreciated in France. The information provided by the polyglot staff of this bureau is, of course, adapted to the needs of the individual inquirer, but there is also a brochure of considerable general interest. It gives particulars of post-graduate courses—*cours complémentaires et de perfectionnement*—some of which are specially provided for the foreigner. At the Hôtel-Dieu, for example, four post-graduate courses have recently been organised for foreign visitors and have been attended by representatives of 20 different nations. Demonstration visits to places like Vichy are also organised. At the obstetrical Clinique Tarnier there is even a course free of charge, but as a rule a modest fee is charged for attendance at each course.

DEATH OF DR. DELAGENIÈRE.

It would be possible to count on the fingers the names of living surgeons in France who have attained prominence without official title. Yves-Henri Delagenière was one of these. He left Paris about 1890 to set up at Le Mans. At that time there were scarcely any surgeons outside Paris and Lyon, and Delagenière rapidly became one of the best known operators in the north of France and showed that a huge surgical practice is not incompatible with scientific work. He published much in surgical reviews, was a member of the Academy of Medicine, sometime chairman of the annual meeting of surgeons, and a Commander of the Legion of Honour.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

DUBLIN UNION.

DURING the past seven years the affairs of the Dublin Union have been managed by three Commissioners appointed by the Government. Following on the recent election of a city council for Greater Dublin, the Union will now come under the control of a committee appointed by that body. A summary published in the daily press of the work done by the Commissioners is a record of satisfactory progress, while there has been a reduction in the demand made on the ratepayers for expenditure on ordinary relief. In 1923, in the year before the Commissioners were appointed, the demand amounted to £281,000; in the last year it was £250,000. Nevertheless, every department of the workhouse has been painted and overhauled. Part of the premises of the old North Dublin Union was reconstructed and furnished, and placed at the disposal of a voluntary society for the reception of those who formerly entered the workhouse as "casuals." The experiment is stated to have been, so far, a great success. The men have improved morally and physically, and their comfort is greater than in the workhouse proper. The accommodation for infirm and epileptics has been greatly improved, and skilled attendants have been substituted for unskilled. In view of the large number of cases of cancer in the Union hospitals, plants for X ray and deep X ray treatment have been installed; this apparatus will also be available for poor-law patients from outside the house. All mental patients have been removed from the Union buildings to a new annexe of the Grangegorman Mental Hospital. The removal of the mental patients from the Union premises gave room for a much-needed extension of the grounds of the Consumptive Hospital. Improvement has been made in the accommodation for sick children in the workhouse; instead of occupying a top floor in the male hospital, they are now in a single-storeyed building standing in its own ground. The nursery at Pelletstown has been reorganised. The result of the changes can be seen from the following figures: for the year ended March 31st, 1924, there were 359 infants in the institution, with 96 deaths; last year there were 436 infants, with 66 deaths. Much attention has been given by one of the Commissioners, Mrs. Power, to the care of boarded-out children. The mortality among children boarded out by other persons than the poor-law authorities was formerly very high. Among 362 infants registered in 1923–24 there were 84 deaths. In 1927–28 there were 489 infants registered and 49 deaths; in 1928–29 there were 620 and 55 deaths; in 1929–30 there were 496 and 44 deaths. In 1923–24 there were 13 inquests in the city of Dublin on nurse-children; since 1927 there has been none.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

At the annual stated meeting of the President and Fellows of the Royal College of Physicians of Ireland, held on St. Luke's Day, Dr. T. G. Moorhead, Regius professor of physic in the University of Dublin, was unanimously elected President. The following were elected censors:—In Medicine: Drs. W. G. Harvey and R. Marshall; in Medical Jurisprudence and Hygiene: Dr. W. J. Dargan; in Midwifery: Dr. G. FitzGibbon. The President nominated the senior censor, Dr. Dargan, as Vice-President. The following were elected Fellows of the College: Drs. E. A. Keelan, J. Lait, and F. MacSorley. In the evening the St. Luke's Day Dinner was held in the College Hall, the President in the chair, over one hundred Fellows and guests being present. Among the principal guests were the Chief Justice of the Irish Free State, Mr. Justice FitzGibbon, the President of the Royal College of Surgeons, and the Dean of St. Patrick's. The new President, Dr. Moorhead, besides being Regius professor of physic in the University of Dublin, is consulting physician to Sir Patrick Dun's Hospital. He was for many years visiting physician to the Royal City of Dublin Hospital, and for five years physician to Sir Patrick Dun's Hospital. He occupied the chair of medicine in the school of the Royal College of Surgeons for a time, and was King's Professor in the School of Physic for five years. The new Vice-President, Dr. Dargan, is senior physician to St. Vincent's Hospital.

ULSTER MEDICAL SOCIETY.

The opening meeting for the session of this Society was held in the Medical Institute on Oct. 16th, when

Mr. Howard Stevenson handed over the President's chair of office to Mr. Henry Hanna. Having given an account of the development of ophthalmology from earliest times, Mr. Hanna spoke of the changes that had taken place in the last year. The chief of these was the application of medical benefits for insured workers. He regarded this as an encroachment on the personal relations of doctors with patients, but trusted that Ulster doctors would continue to preserve their individuality. At no time in social history had there been such a wave of medical interest in human affairs, and through the pages of a prolific press laymen were fully alive to all matters affecting the general health of the community. Particular attention should, in his view, be paid by medical men to this movement. More medical men should take an interest in politics, more especially the more experienced and those not directly concerned with the pursuit of private practice. The subject of preventive medicine was looming large, and promised to play the part of vanguard in further advancement. In this connexion he noted especially antenatal clinics, medical inspection of school-children, and improved housing schemes. The conscientious, well-trained, general practitioner was the backbone of all such progress, and on his attitude and the ideal he set before him rested the hope of a successful issue. It was important to try to re-establish in the minds of the public the fact that the ideal of a true family physician was not dead. Speaking of specialisation, the President held that our science was tending to become too mechanised. Too many instruments were at our disposal for the elucidation of disease; for example, no part of the body was now immune from the prying interference of electric light in various forms. We might be tempted to rely too much on the machine and not enough on the man behind it. With ophthalmoscopes, microscopes, slit-lamps, electrocardiographs, doctors set out prepared to conquer and elucidate all disease, and were sometimes liable to forget that these were only complementary to clinican acumen.

BELFAST MEDICAL STUDENTS' ASSOCIATION.

The opening meeting was held in the Great Hall of the Queen's University on Oct. 17th, when Dr. Robert Marshall gave his presidential address on the Life and Work of William Harvey. The address was followed by the exhibition of the Harvey Memorial Film, which was kindly lent for the occasion by the President of the Royal College of Physicians, London. A large number of medical men availed themselves of the opportunity of seeing the film, and Dr. Marshall was congratulated on creating a precedent which proved of great interest and educational value.

DR. ANDREW LEITCH.

The sudden death at the age of 49 of Dr. Andrew Leitch, of Castlederg, on Oct. 6th, came as a shock to his many friends in Northern Ireland. He studied medicine in the Queen's College, Belfast, and graduated M.B. in 1905. He studied also at the London Hospital, taking his M.D. and D.P.H. in 1909. Returning to practice in his native county of Tyrone, Dr. Leitch was elected medical officer to Castlederg Union Infirmary, and was later made a medical examiner to the New York Equitable Life Insurance Society. He had a large and scattered practice, involving long journeys through difficult country and tedious tramps to cottages, impossible to reach save on foot. He never spared himself and was greatly loved in the district, though he took little part in public affairs. Dr. Leitch was a man of fine physique, and was one of the best Rugby forwards of his time. His genial hospitality made him an ideal host, and he will be greatly missed by a large circle of personal friends.

DR. HENRY DOBSON OSBORNE.

Dr. H. D. Osborne died on Oct. 17th at his home in Belfast in his seventy-fifth year. Born in County Derry, he took his medical course in Belfast and Edinburgh, qualifying in 1881. The same year he volunteered as a medical missionary of the Irish Presbyterian Church. After four years' service in India he was forced to return home on account of ill-health. He was appointed medical officer to No. 3 Dispensary District, Belfast, and held this appointment at the time of his death. Some months ago the Belfast Board of Guardians paid a tribute to his long and devoted service. For a considerable number of years he was visiting physician to the Belfast Maternity Hospital. Dr. Osborne took a deep interest in the social, philanthropic, religious, and masonic life of Belfast.

LONDON MEDICAL EXHIBITION.

THIS exhibition was opened in the new hall of the Royal Horticultural Society, Greycoat-street, Westminster, on Monday last. It was well attended; medical men, publishers, and others interested in the practical side of medicine took the opportunity of thus estimating the progress which has been made in pharmacology and the production of drugs, and in the manufacture of surgical instruments.

The exhibition was arranged in some 180 stands, while the fact that many of the exhibitors appealed to the interests of different branches of medicine and surgery makes the classification of the material shown only a general one.

DRUGS AND PHARMACEUTICAL PREPARATIONS.

In this section one of the most prominent displays was that of BURROUGHS WELLCOME AND CO. (Snow Hill Buildings, E.C.), who added to the utility of the exhibit by photographs, illustrations, and charts which demonstrated the action of some of their preparations. The exhibits included Diginutin, a stable solution of the total glucosides of digitalis leaf, physiologically standardised, and intended for oral administration, replacing tincture of digitalis, which is unstable and decomposes on dilution with water; and Epinalin, which combines the powerful but relatively transient action of adrenalin with the more prolonged effects of ephedrine. Other products shown were Infundin and Neo-Infundin. Neo-Infundin, the oxytocic principle of pituitary posterior lobe, has the same indications in labour as Infundin, but the absence of the pressor principle precludes the occurrence of the vasomotor phenomenon known as "pituitary shock."—HOFFMAN-LA ROCHE CHEMICAL WORKS, LTD. (51, Bowes-road, London, N.), made a feature of Sedormid as a sedative and mild hypnotic, practically non-toxic. Neither a bromide nor a barbiturate, this preparation, allyl-isopropyl-carbamide, is almost tasteless, and slightly soluble in water, while in organic solvents the solubility is somewhat higher. The melting point is 194° C. The manufacturers point out that this drug has a wide therapeutic field, acting as sedative or hypnotic according to the dose, while small doses taken at intervals during the day promote natural physiological sleep at night without any after feeling of lassitude.—CROOKES COLLOSOL SOLUTIONS (Crookes Laboratories, 22, Chenies-street, W.C.). A well-arranged display demonstrated innovations which have been made in this form of medication. The centre of interest of the stall was the intravenous solutions, normal saline, hypertonic saline, gum infusions, and glucose; in this connexion a collosol transfusion ampoule was shown—an apparatus holding 560 c.cm.

and constructed with a view to ease of transport and simplicity in manipulation, while security from contamination is ensured.—On the stall of C. J. HEWLETT AND SON, LTD. (35-42, Charlotte-street, E.C.), were shown Hormonigen tablets, containing the hormones of the thyroid, pituitary, ovary, and testes; Somnigen, a purified solution of the hydrobromides of the alkaloids of opium in sherry, a standardised preparation free from nauseous after-effects; and Veronigen, a hypnotic remedy in liquid form designed to be a preventive of post-operative vomiting. "Colloigen" (alumina, argentum, calcium, sulphur and iodine—aqueous and oily—) were among the colloidal preparations shown, while many kinds of atomisers and sprays were exhibited, as well as Baron's Vaginascope, which is a compact, self-retaining, and illuminated speculum. The "Complete G.P." Bag, admirably arranged for holding a complete armamentarium for emergency and urgent treatment, met with approval.—A prominent display on the stand of BAYER PRODUCTS, LTD. (19, St. Dunstan's Hill, E.C.), of Avertin was to be expected, seeing the admitted value of tribrom-ethanol as a basal anæsthetic. The same firm showed Compral, a new analgesic in which pyramidon is combined with trichlorethyl-urethane, the anodyne effect being particularly useful in dysmenorrhœa; Ehrlich's Salvarsan preparations, Neo-salvarsan and Myosalvarsan; and Luminal, which many physicians employ in the treatment of epilepsy.

Among the preparations of PARKE, DAVIS AND COMPANY (50-54, Beak-street, W.) were Adrenalin Chloride Solution, the well-known natural constringent and blood-pressure-raising principle of the suprarenal gland; Citronin, a new preparation of potassium guaiacol sulphonate with ethylmorphine hydrochloride, designed for the treatment of asthma, catarrhal conditions of the respiratory tract, and bronchitis; Digifortis Tablets, each tablet contains 1 gr. of powdered fat-free digitalis leaves, physiologically standardised; and Elixir Sodium Sulphocyanate, a palatable preparation containing 20 gr. of sodium sulphocyanate in each fluid ounce, on which favourable reports have been made in the treatment of hypertension. Other noteworthy exhibits were:—Immunogens, a series of antigens originated by Dr. Ferry in the Research Laboratories of the firm—viz., Catarrhalis, Gonococcus, Pertussis, Pneumococcus, Staphylococcus, and Streptococcus. In most instances these products are available either as the antigen from the single organism, containing, in addition to the predominant organism, antigens from secondary infections. The following drugs were also displayed: Thromboplastin, a sterile suspension of comminuted brain tissue for local application in the control of hæmorrhage; Uritone Ampoules, containing 5 c.cm. of a 40 per cent. solution of Uritone for intravenous injection in the treatment of pyelitis, nephritis, anuria and dysuria; Ventriculin, a desiccated stomach extract for treatment of pernicious anæmia. Vaccines, the bacterial vaccines prepared in the laboratory of the Department of Therapeutic Inoculation, under the supervision of Sir Almroth Wright, at St. Mary's Hospital.—In the NORDISK INSULIN LABORATORIUM, Copenhagen, founded under warrant from the King of Denmark, the Danish Leo Insulin is manufactured under the supervision of Prof. Krogh, a Nobel prizeman in medicine. This insulin is uniform in strength and purity, and contains 16–20 international units per mg. of the dry substance. It is supplied in rubber-capped vials of 10 c.cm. as a sterile constant and stable solution without any preservative. The concessionaires for the British Empire are C. L. Bencard, Ltd.; for the Midlands, James Woolley and Sons; and for Scotland, John Bell and Croyden, in association with Savory and Moore.

HOWARDS AND SONS (Ilford) submitted to notice their Agotan brand of Phenylcinchoninic Acid, which corresponds to the B.P. quinophan, but is claimed to be of a higher standard of purity. The value of the preparation in various forms of rheumatism, gout, and neuritis is well established. The standard ether of this firm, which is in regular use in six of the large metropolitan general hospitals, was also displayed in its convenient form for distribution.—The stand of BRITISH DRUG HOUSES, LTD. (Graham-street, City-road, N.), demonstrated the policy of the firm in utilising the findings of research workers. The B.D.H. Vitamin Products, Radiostol, Radiostoleum, and Radio-Malt have been effectively introduced to members of the medical profession; the first has aroused interest recently as a factor in influencing perfect tooth formation and in preventing dental caries, and as an adjunct to calcium chloride in the lead selenide treatment of cancer. Carotene has been shown to confer complete immunity against the spontaneous infections occurring in rats fed on a diet deficient in vitamin A. It is available in sugar-coated pellets, specimens of which will be found at the stand. Quinanil is an antiseptic which owes its discovery to research carried out at Leeds University. It possesses high bactericidal value with low toxicity, and promises to be a valuable antiseptic for use in surgical operations and in the treatment of genito-urinary infections. The well-known preparation S.U.P. 36 was also displayed. The pharmaceutical preparations and drugs displayed by ALLEN AND HANBURYS, LTD. (Bethnal Green, E.), occupied three large stalls, and it is difficult to select any one preparation which shows more merit than another, but attention may be called to "B.S.C. Tablets" for the treatment of chronic constipation, hepatic disorders, and the toxæmias consequent upon stasis. The tablets contain active pancreatic extract with bile acids, an extract of duodenal mucous membrane, together with a proportion of ipecauanha. "Charkolin," a new agent for the treatment of intestinal infections with abnormal fermentation and the formation of toxins, has the absorbent properties of a highly activated vegetable charcoal with the toxin adsorbing qualities of Osmo Kaolin, a pure colloidal kaolin which is also a preparation of this firm. Lixen Brand Elixir of Senna Pods, prepared by a special process which eliminates the griping tendency, should also be mentioned. Each teaspoonful is equivalent to 12 large senna pods.

On the stall of OXO LIMITED (Thames House, Queen-street, E.C.), were displayed their therapeutical products, Liveroid (Oxo Ltd.'s Liver Juice), and Splenoxoid (Oxo Ltd.'s Spleen Juice); the former is designed for the treatment of anæmia in all its forms; the latter contains the essential constituents of spleen in concentrated form, and has been used in tuberculosis of the lungs, bones, and joints, and for the treatment of polycythæmia. Oxo, Hospital Oxo, Oxo Cubes, Lemco, Beef Essence, Lab-Lemco, and Oxoid Gland Preparations, in both tablet and fluid extract form, were included in the display.—BOOTS PURE DRUG CO., LTD. (Nottingham), were giving prominence to their "specific products," Stabilarsan, Sulphostab, Bismostab, and Gonococcal Vaccines. New preparations included Olivita, with a vitamin D content equalling cod-liver oil; Vitamalt, containing the essential vitamins; Reinforced Cod-liver Oil, and Compound Glycerine Thymol Pastilles, whose bactericidal value is strengthened by the "amyl meta cresol" content. Visitors were also introduced to Amyl Meta Cresol, a "Boots Research Antiseptic," with a carbolic coefficient of 250; Jacobson's Solution (benzyl cinnamic ester) for T.B., and a specially prepared Liver Extract (Boots), each container carrying the correct active fraction of ½ lb. of fresh liver.—E. H. SPICER AND CO., LTD. (Watford, Herts.), made a feature of Edwenil, "the natural antibody," which is available to the profession in rubber-capped bottles of 25 c.cm. The use of this preparation in bacterial invasion is recommended by Mr. Frank Coke, Dr. S. G. Billington, and Dr. Nevill Hornibrook in a handbook distributed by the firm. Dr. Billington's report appeared recently in the *Medical World*, and calls attention to the preparation alike as a diagnostic and a therapeutic agent.

(To be continued.)

PUBLIC HEALTH SERVICES

THE HEALTH OF LONDON.

Statistics for 1929. — Estimated (R.-G.) population 4,417,900. Births, 70,089; rate, 15·8. Deaths, 62,889; rate, 14·2. Death-rate from tuberculosis, 1·09; and from cancer, 1·55. Infant mortality-rate, 71; and maternal mortality per 1000 births, 3·61.

Dr. F. N. Kay Menzies reports that the birth-rate was the lowest ever recorded in London and that the death-rate was 2·1 higher than in the previous year. The markedly increased number of deaths was due to the severe influenza epidemic, associated with an unusually rigorous winter. In addition there was epidemic prevalence of whooping-cough, which caused 1141 deaths, the greatest number in any year since 1918. A table shows that the influenza epidemic had no effect on the deaths in the age-periods up to 25, and only a slight effect from 25 to 45; the bulk of the 9000 extra deaths as compared with the previous years were at ages over 45. Infant deaths showed some increase, mainly, however, owing to whooping-cough, and, considering the weather conditions, the increase in diarrhœal mortality of infants was negligible. Among the 28 boroughs the lowest infant mortality-rates were recorded in Lewisham (44), Stoke Newington (47), Hampstead (54), Hackney (57), and Hammersmith, Woolwich, and Wandsworth (each 62). The highest infant mortalities were recorded in Southwark (82), St. Pancras (82), Shoreditch (84), Kensington (86), Stepney (90), and Paddington (101). Fatal street accidents continue to increase and the total was 814, as against 747 in 1928. Among children under 15 years the deaths numbered 169, being an increase of 20.

INFECTIOUS DISEASES.

There were 1908 notifications of the mild type of small-pox, and 3031 cases were admitted to the Metropolitan Asylums Board hospitals from the London area. There were 9 deaths among these patients, including 6 from the administrative county. In 8 of the fatal cases there was no evidence of vaccination, but in one at the age-period 41 to 45 there had been infantile vaccination. Small-pox of the virulent type was introduced into London by the passengers and crew of the s.s. *Tuscania*. Altogether there were 45 cases with 8 deaths in different parts of the country, but none among the 7 London cases arising from this source. There were 15,855 cases of scarlet fever with 75 deaths, a case-mortality of 0·5 per cent.; and 11,788 cases of diphtheria with 350 deaths, a case-mortality of 3·0 per cent.

There were 312 notifications of puerperal fever and 758 of puerperal pyrexia. The childbirth deaths from puerperal fever numbered 132 and from other causes 121. Dr. Menzies gives a table of the childbirth deaths in the borough for the eight years 1920 to 1927, in order to avoid the misleading effect of the small figures of single years. The rate in the whole county for this period was 3·09 made up of 1·46 from puerperal fever and 1·63 from other causes. The six boroughs which showed the lowest childbirth rates during this period of eight years were Finsbury (2·31), Shoreditch (2·35), Greenwich (2·38), Stepney (2·45), Bethnal Green (2·54), and Southwark (2·69). For the year 1929 the County had a maternal rate of 3·61 and the boroughs which had the lowest rates were Deptford (1·08), Greenwich (1·22), Finsbury (1·48), Battersea (1·91), Shoreditch (2·00), and Southwark (2·17). It is of interest to note that four of the six boroughs which had the lowest rates in 1929 —viz., Greenwich, Finsbury, Shoreditch, and Southwark—also had the lowest rates for the longer period of 1920 to 1927. The boroughs with the highest maternal rates for 1929 were Wandsworth (4·97), Hampstead (5·17), Lewisham (5·21), Woolwich (6·06), Kensington (6·29), and Chelsea (9·51).

There were 351 cases of enteric fever with 45 deaths. A remarkable incident was the occurrence of 12 cases of typhoid fever in Lambeth, 2 of which were fatal, in a house occupied by two families. The source of the infection could not be traced. Typhoid fever was also prevalent in September and October in south-east London and the neighbouring districts of Beckenham and Penge. There were 124 cases of which 7 were fatal, 6 in Lewisham and 1 in Penge. Investigation indicated that this epidemic had originated from a source of infection which was active about Sept. 14th, and again about Sept. 26th, and further evidence incriminated a ham and suggested that the outbreak was caused by a carrier, who had infected cooked food. Four genuine cases of anthrax were reported, none of which was fatal. Infection in one case was ascribed to a recently purchased fur coat and in the other three to the handling of skins or hides.

Among 59 confirmed cases of poliomyelitis, 6 proved fatal and 2 deaths of unnotified cases were recorded; of 71 genuine cases of encephalitis, 25 were fatal and 32 deaths of unnotified cases were recorded. Formerly accommodation at the Northern Hospital for post-encephalitics has been limited to children from 3 to 16 years, but the Metropolitan Asylums Board recently set aside 50 beds for adults. Between May and December, 57 adults were admitted, but unfortunately the provision is quite inadequate and there is a long list of patients waiting for admission.

The death-rate from pulmonary tuberculosis was 0·96 and from other forms 0·13. There are now on the registers of the metropolitan boroughs 32,117 cases of pulmonary tuberculosis (in the proportion of 18 males to 14 females), and 12,730 cases of non-pulmonary tuberculosis (in the proportion of 11 males to 10 females). The cases of pulmonary tuberculosis on the registers number about 7·6 times the annual deaths, while the non-pulmonary cases are 22 times the annual deaths. Dr. Menzies discusses the apparently high tuberculosis mortality among the patients in mental hospitals. First, it appears that the death-rate from pulmonary tuberculosis among male patients is two and a half times and among female patients seven times the normal. When correction is made for the higher death-rate from all causes among mental patients and the rate is expressed as a percentage of all deaths, the phthisis deaths among male mental patients are found to be lower than normal but the female deaths are in marked excess. Another correction has to be made for the much greater proportion of deaths from general paralysis of the insane among the male mental cases. Such deaths are six times as frequent among males as among females. When general paralysis is excluded the death-rate from tuberculosis among mental patients approximates that for London as a whole, the male rate being in excess of the female. Experience has shown that the phthisis mortality of a mental hospital is mainly governed by the phthisis mortality of the area from which the patients are drawn. Dr. Menzies's conclusion is that the phthisis mortality in the Council's mental hospitals does not differ materially from that of the general population.

ADMINISTRATION.

Inquiry was made during the year into continental systems of refuse collection and disposal, and how far they are adaptable to London; the City of Westminster is investigating systems of dustless collection. The boroughs are being urged to consider the improvement of facilities with regard to public conveniences. Revised by-laws have been drafted for house drainage, endeavouring to put modern requirements into plain technical language. Private slaughter-houses in London are rapidly disappearing. In 1873 there were 1500, in 1928, 109. Under these circumstances, and in view of the development of motor transport, the Council have decided that additional public abattoirs in London are not required.

Housing.—The Carlyle-street improvement scheme

St. Marylebone was confirmed by the Ministry in ebruary. Between 1911 and 1921 the size of the verage family decreased from 4·153 persons to 786. During the period 1921–28 the population London decreased by 55,000 and the houses ncreased by 30,000. There was an overflow of 58,000 persons to the outer London area. The ouncil erected 22,622 houses in this outer area and nerefore provided for over 100,000 of the overflow opulation. The smaller family does not diminish ne demand for houses but does diminish some of the vercrowding. There is still much overcrowding of rge and growing families, and a disinclination to ove if the tenant thereby loses the protection of the ent Restriction Acts. The Council allocates half s new houses to the boroughs and urges them to e that the houses vacated are not again overcrowded. y far the worst feature of London's housing is, the opinion of Dr. Menzies, the underground ooms and basements. He strongly urges that tatutory authority should be obtained for the osure of the basement portion of houses which are therwise habitable. When basements are closed nere is a 100 per cent. removal of the worst insanitary onditions in housing at a far less cost than the earance of insanitary areas in which certainly ot more than a quarter of the living rooms are so rossly insanitary as the worst type of basement wellings. There are some 30,000 basement dwellings London, which are unfit for human occupation. hey are not all separately occupied, but house about 00,000 persons.

Milk.—Out of 2084 samples of outside milk iologically examined 158, or 7·5 per cent., yielded ibercle bacilli. The cows kept at the mental hospitals ere inspected quarterly by the veterinary surgeon. addition samples are taken of the milk, as supplied vice a year. Out of 81 such samples 8 were found be tuberculous. The cowsheds in the County ave diminished from 738 in 1888, the year of the ouncil's inception, to 52. The cows are examined uarterly by the veterinary surgeon and are now under 00.

Venereal Diseases Scheme.—The new V.D. cases mbered 15,985, about 400 less than the previous ear. The attendances of venereal cases per new se show a steady improvement. The figure was in 1927, 46 in 1928, and 48 in 1929. Medical actitioners use the scheme increasingly. The ostel accommodation for young women under eatment has proved valuable, but the arrangement r securing vocational training at rescue homes has t been utilised as anticipated.

The *Antituberculosis Scheme* works smoothly and e care committees have provided valuable assist- ce for patients. Handicraft classes have now been tablished in 11 boroughs. An attempt has been ade on a small scale to train young women for sts in the Metropolitan Asylums Board institutions d young men for work in the parks. The after- story of patients treated in residential institutions ring 1923 shows that of 3396 adults 1293 were ve at the end of five years, of whom 57·5 per cent. re at work and 5·7 per cent. were fit for work but employed. Of 474 children discharged from stitutions in 1923, 383 were alive after five years. ese survivors included 133 pulmonary cases, of om 41 were at school and 79 at work, and 250 non- lmonary cases of whom 102 were at school and 3 at work. Every child requiring institutional atment receives it promptly and at the end of the r there was no child waiting for a bed.

In the section dealing with the *Mental Deficiency t* an investigation by Dr. F. C. Shrubsall of the ily histories of 1360 cases of the various grades of ntal defect which came under notice in 1928 and 29, shows that in only 129, or about 9·5 per cent., s there a brother or sister who was also mentally ective.

Dr. Letitia Fairfield gives particulars of the after eers of children who have been deemed ineducable at school and also a survey of women delinquent defectives referred by the London police-courts in the five years 1925 to 1929.

REPORTS OF SCHOOL MEDICAL OFFICERS.

—	No. on roll.	Average attend-ance.	Routine inspec-tion.	Special examina-tions and reinspections	Percentage of defects.
County of Nottingham	54,041	47,604	15,753	20,850	25·48
Bristol.. ..	54,502	47,687	13,420	44,475	15·4
County of Northampton	25,588	—	7,277	1,505	20·02
Lincolnshire: Parts of Holland ..	11,300	9,945	3,715	4,159	30·0

County of Nottingham.

Dr. Christopher Tibbits describes the filling up of two large lacunæ in the service. Reorganisation of the county dental service, involving the appointment of four more dentists and four more dental nurses, working under an administrative chief dental officer, will ensure not only more frequent dental inspections and treatment, but also a more equitable distribution of facilities. The extension will cost about £4000 a year, but it will be sound economy; for at present much of the value of the dental work has been lost owing to the length of time between the visits to schools. This provision may still suffice when the dental service is extended to pregnant women and pre-school children, a development which would reduce the average cost of treatment. The second improvement is a system of providing spectacles immediately they have been prescribed, the parents undertaking to pay for them later. As a result, the proportion of children who obtained glasses when ordered rose from 45 to 83 per cent., and the great majority of the parents have fulfilled their promises. Moreover, the number of cases in which glasses had to be provided gratuitously fell from 124 to 46. Parents have been attracted by the non-rusting nickel frames at a maximum price (for compound lenses) of 6*s*. As in so many other matters, the greatest credit is due to the efforts of the teachers. A slight increase in the medical staff made it possible to overtake all the leeway caused by staff vacancies early in the year. In future appointments the salary scale will be brought up to the accepted level and candidates must possess the D.P.H. diploma and have had at least three years' post-graduate experience. Salaries of nurses will also be made adequate to maintain the strength and quality of the service. Dealing with the work of the school doctor, Dr. Tibbits mentions the risk of stagnation and how this is minimised by the potentialities for investigation. His report contains an account of three inquiries. The first is a survey by Dr. Tibbits himself of dental administration, in which it is laid down as a basis for staff needs that a whole-time dentist can inspect 4000 children annually and treat half of them. The second by Dr. C. W. Jeremiah discusses the results of treatment of otorrhœa by glycerin and flavine, which he finds promising. Early treatment is imperative if a sound ear and normal hearing are to remain when discharge ceases. It would be well for infant welfare centres and schools to distribute a leaflet calling the attention of parents to the wisdom of seeking advice on the first sign of discharge. Dr. John Ferguson compares alternative methods of treating otorrhœa (1) by glycerin and flavine, where he is in general agreement with Dr. Jeremiah, and (2) ionisation, which he finds more likely to be successful in recent cases where there is no unhealthy granulation tissue or focal sepsis. If no marked improvement follows 16 treatments, he regards further ionisation as a waste of time.

Bristol.

Dr. R. A. Askins in his last report (for he is leaving to take up an important post in South Africa) tells of increasing activities; an additional whole-time medical officer and two extra nurses have been appointed. In September, when the new members of the staff took up their duties, the clinics were made available for the treatment of minor ailments among pre-school-children, thereby rendering more effective the coördination between school medical and public health committees. The oculist, Dr. R. R. Garden, remarks that as time goes on there is a decrease in the proportion of cases referred for the first time after the children have entered school—an indication that the control of squint is now being obtained in the early stages, when treatment can be given with the best results. He stresses the value of orthoptic methods in restoring vision to old squinting eyes. The orthopædic surgeon, Mr. H. Chitty, is also seeing cases in his department at an earlier stage. The school dentists attend to the teeth not only of school- and pre-school-children but also of expectant mothers—the figures this year being 252 and 188 respectively—and of patients referred from the tuberculosis department. Diphtheria was unusually prevalent in 1929, and the health committee decided to extend as widely as possible the Schick method of immunisation. This year it is proposed to establish a child guidance clinic to deal with so-called difficult children, a task for which Dr. Askins regards the school medical service as especially well fitted; the medical officers have experience in dealing with mental and physical defects, and the nurse being welcome in the homes can obtain information about environmental factors. We think he is not overstating the potentialities of a staff which is familiar with these problems in its daily work, is in close touch with the teachers, and acquainted with the schools as well as the homes. The school doctor who takes a special interest in practical psychology is thus better able to grasp the situation as a whole than a non-medical psychologist.

County of Northampton.

Dr. J. M. Mackintosh, who writes the report, did not become school medical officer until the end of the year, the actual achievements of which do not reach the level he would have desired. The fundamental object of the service is, he writes, to prepare each child to take his place in the world as an independent citizen, sound in body, clear in mind, and with some standards of moral and social conduct. Towards its realisation he mentions two principal methods of approach:—

(*a*) "The investigation (and, we would add, the removal) of the causes of physical and mental inefficiency which prevent the child from deriving full benefit from the education which the State provides."

(*b*) "The education of the child in personal and social hygiene, so that he is enabled not only to avoid the disasters which result from ignorance of the principles of clean and healthy living, but also to develop his physique to its full potential capacity."

In the early days of school medicine attention was mainly devoted to the former, but in course of time it became evident that not a few of the disabilities of the young child were due to early factors, and a further extension of preventive work is being undertaken to safeguard the expectant mother and her unborn child. "Finally," he adds, "the wheel is turned through its full cycle, and we begin to realise more and more that ignorance of the principles of hygiene, of the duties and responsibilities of parenthood, is the chief cause of ill-health in the succeeding generation." Thus the second object is reached and the school doctor must become a teacher, working in coöperation with all branches of the teaching profession. Dr. Mackintosh insists on the necessity of giving medical officers time and opportunity for investigation and research. His remarks conclude with a wise discussion of the teaching of sex hygiene. The achievements of the past year were limited by shortage of staff, so that 74 departments were left unvisited while reinspection and investigation could not be carried out. There is need for another medical officer, and one full-time nurse can hardly be adequate for a county, even though 74 district nurses give part-time help. In spite of these handicaps much good work was done.

Lincolnshire: Parts of Holland.

Dr. H. C. Jennings reports the coming into force of a scheme for the operative treatment of tonsils and adenoids which is working well. An additional dental surgeon was appointed in April, and the cost of dental treatment per child has fallen by 2*s.* 4*d.* a head on account of the larger numbers dealt with. Each of the dentists is provided with a fully equipped travelling clinic, and it is found that these dental vans form the right expedient for rural areas. The running cost is stated to be about £80 a year for one van, and £143 (proportionately less) for two. The percentage of acceptances for treatment was 47, better than in many counties; this, Mr. H. G. Fletcher, L.D.S., remarks, is gratifying, since the 9-year-old group now being dealt with can generally avoid treatment either by influencing parents unable to resist their protests, or more simply by failing to take home the notices. Dr. Jennings thinks he would get higher figures if there were a portable cinematograph apparatus worked from the dental van. Such a method of enlightenment would help to give the parents a right outlook on dental matters. An important part of the dental officer's duty is to give instruction in the means by which dental operations can be avoided. Dr. Jennings finds the standard of school cleanliness varies much in the county, and he is sure that more systematic supervision by head teachers would produce better results. Matters are made much easier, he remarks, when the playgrounds have impervious well-drained surfaces.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 11TH, 1930.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox 44 (last week 74); scarlet fever, 2008; diphtheria 1422; enteric fever, 44; pneumonia, 651; puerperal fever, 49; puerperal pyrexia, 114; cerebro-spinal fever, 13; acute poliomyelitis, 21; acute polio-encephalitis, 2; encephalitis lethargica, 18; continued fever, 1; dysentery, 4; ophthalmia neonatorum, 109. No case of cholera, plague, or typhus fever was notified during the week.

The notifications of small-pox are fewer than for many months past. Of the total of 44, 23 were reported from the county of London, and the remainder from the following 6 counties: Essex, 12 (of these West Ham 6); Lancaster, 4 (Urmston); Leicester, 5 (C.B. 2, Loughborough 2, Blaby R.D. 1); Stafford, 1 (Stoke-on-Trent); Glamorgan, 1; Monmouth, 1.

The number of cases in the Infectious Hospitals of the London County Council on Oct. 14th–15th was as follows: Small-pox, 140 under treatment, 4 under observation (last week 168 and 1 respectively); scarlet fever, 1647; diphtheria, 1953; enteric fever, 23; measles, 98; whooping cough, 127; puerperal fever, 17 (plus 6 babies); encephalitis lethargica, 119; "other diseases," 38. At St. Margaret's Hospital there were 13 babies (plus 2 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 5 (1) from enteric fever, 8 (1) from measles, 8 (3) from scarlet fever, 7 (2) from whooping-cough, 31 (8) from diphtheria, 55 (14) from diarrhœa and enteritis under two years, and 23 (3) from influenza. The figures in parentheses are those for London itself.

The deaths from enteric fever outside London occurred at Stoke-on-Trent, Grimsby, Liverpool, and Huddersfield. Liverpool reported 3 deaths from measles. Fatal cases of diphtheria occurred at Liverpool 6, Cambridge and Birmingham each 2. Diarrhœa accounted for 4 deaths each at Nottingham, Liverpool, and Manchester, 2 each at Salford, Leeds, and Cardiff.

The number of stillbirths notified during the week was 263 (corresponding to a rate of 39 per 1000 births) including 46 in London.

CORRESPONDENCE

A MEDICAL SERVICE FOR THE NATION.

To the Editor of THE LANCET.

SIR,—It was with some feeling of chagrin that I ead Dr. Evans's letter, and I trust that it may ot be taken as reflecting the sentiments of any rge section of a profession whose greatest function the alleviation of suffering in whatever station of fe it may be found. Primarily it might be of interest conjecture as to what part medicine on "wholesale nes" has played in the production, or in the pre-ention of production, of a population of whom he ates a large proportion is composed of "morally, hysically, and mentally inferior people." Then, too, the present phase of industrial depression, a phase hich from all appearances is not likely to be anescent, the number of people "not economically orth private doctoring" assumes gigantic propor-ons, and we trust that this is not ascribed to some herent moral degeneracy in the affected individuals.

Time was when the voluntary hospitals were resumed to function for the relief of the indigent oor, but there has grown up of late among a not considerable portion of both the medical and lay blic a feeling that a very different qualification om poverty is necessary to secure admission to ese wards. Dr. Evans seems intent on abolishing overty entirely from these beds, a proposal which ill not meet with much approval from the majority ho subscribe hardly earned cash to institutions hose very name is becoming yearly more anomalous. rtunately, municipal opinion in many cities is king a more farsighted and humane view of the eds of their poor, and is even now attempting to ove away from "wholesale medicine" to a standard treatment which, ere long, will compare favourably th that meted out at any voluntary hospital rious to relate, too, this work in many instances being performed by members of the profession, who ll think in terms of human maladies, rather than the economic fitness of their patients for treatment, d whose ideal of service is not always directly oportional to their scale of payment.

We must, I think, in attempting to formulate hemes for the future of the profession, bear in mind e fact that unless we are prepared to study and ovide personal treatment for the relatively poor, ways noticing that each decade with its increasingly pensive diagnostic and therapeutic measures adds this number, we shall not only incur a widespread ium, but we shall accelerate the physical and ntal, and consequently the moral degradation of e strata to which Dr. Evans refers.

I am, Sir, yours faithfully,

Birmingham, Oct. 19th, 1930. H. JOULES.

To the Editor of THE LANCET.

SIR,—I have read Dr. Evans's letter with interest, there are certain things in it which in my opinion open to grave criticism. Thus on the subject of te service he writes:—

> "Those who have served the State in any capacity know that the individual is sacrificed to the State . . ."

one who has been in a State service since 1912, ner on a whole- or a part-time basis, I must deny s. It is true that during the war the welfare of individual sometimes had to give way to the gencies of the service; but any sacrifice there made was inherent in the state of war, and not in the State Medical Service. Again:—

> "It is assumed, in the first place, that the best doctoring is provided by a patient's private doctor who is paid for his work."

This again I deny. It is contrary to the whole experience of our voluntary hospital system. This has served the country well for hundreds of years, and has been the crucible of great traditions of personal service, one of which is that the poor person, relying on the charity of the doctor in a time of sickness, has received from him just as loving care and skill as the person who pays high fees. I do not believe that when that patient passes from the voluntary to the municipal hospital he receives any the less the best care and skill that that man can provide; nor is it my experience that the doctor, whether consultant or general practitioner, who sees the widow and orphan for nothing gives them any less good service.

This assumption is a repetition of his second objection to an extension of the present insurance service.

> "Another objection is that, taken as a whole, in spite of the fact that the roll of panel doctors includes the best men in the profession, panel practice cannot be carried on at a sufficiently good standard for reasons that are too well known to the profession to require enumeration here. If the number of panel patients, therefore, is increased, it will inevitably increase the practice of inefficient medicine."

Now this is a most serious statement to make. The present administration of the Insurance Acts is based upon the assumption that each doctor gives to his panel patients exactly the same medical attention as he gives to those who pay him for services rendered. What then are these reasons "too well known to the profession" upon which Dr. Evans bases his statement that the contrary is the fact? He should state them clearly, so that laymen also may know them that they may take steps to amend the administration of these Acts.

But Dr. Evans's most deplorable statements are these. That a large proportion of the nation economically is not worth the doctor treating in private practice, that they are morally, physically, and mentally inferior people, and that they must be treated even on a cheaper scale than that which panel practice entails. He adds that in this there is "no class distinction," and from his context one learns that by this he means the standard of living. To what does that word economically refer? On first sight it reads as though it referred to the doctor's practice; but the end of the paragraph suggests he means to the nation. Mentally and morally the weaklings may be spread equally throughout the nation, but there is no doubt that physically there are more inferior people among the poor. Yet at birth all are equal, and it is the function of the State to eliminate the factors that make this difference. To do this will economically be well worth while.

I am, Sir, yours faithfully,

T. B. LAYTON.

Queen Anne-street, W., Oct. 20th, 1930.

To the Editor of THE LANCET.

SIR,—Dr. Evans's letter is very much to the point. At present the medical profession is in danger of becoming merely a band of qualified clerks, and the patient reduced to the level of a clerical error. The only hope is that increased bureaucratic control will

be prevented, at least temporarily, by the poverty of the nation, and that during this time wiser counsels will prevail. Under Government control medical research might well be stationary for the next hundred years. There would be no room for Mackenzies and Bantings. I am, Sir, yours faithfully,

Oct. 20th, 1930. J. C. G. DICKINSON.

GALL-BLADDER DISEASE.

To the Editor of THE LANCET.

SIR,—Absence from home, at the meeting of the British Medical Association in Canada, has made it difficult for me to bring myself once more abreast of current literature. It is for this reason that only to-day have I read the leading article in your issue of August 16th, and the paper by Bryan Williams and McLachlan upon which it is based.

Discussions as to the sources of infection of the gall-bladder have not yet allowed the conclusions of any investigator to be generally accepted. The views of Rosenow, Walton, Wilkie, and others that infection as a rule is blood-borne is not in accord with evidence I have submitted. Two years ago I gave an account [1] of 81 consecutive cases in which the most careful investigations were made for me by Dr. A. L. Taylor and others, in order to throw light upon this question. In 63 cases the infection undoubtedly began in the outer coats. In the remaining 18 it appeared probable that infection beginning in the outer coats attacked the inner coats more severely only when impaction of a stone in the cystic duct caused obstruction, quickly followed by inflammatory changes which fell upon the mucosa first. Subsequent experience has confirmed all these findings. So far as my own work is concerned, there can be little doubt that it is upon the outer side, and not through the bile or from blood-vessels, that infection first reaches the gall-bladder.

The surgical significance of this is apparent; and the difficulty of treating cholecystitis by drugs which first reach the interior of the gall-bladder is explained.

I am, Sir, yours faithfully,

Portland-place, W., Oct. 20th, 1930. MOYNIHAN.

AUSCULTATION OF MUSCULAR TREMOR.

To the Editor of THE LANCET.

SIR,—In Dr. Young's admirable survey of the rôle of the stethoscope, which appears in your last issue, he mentions the value of auscultation in the examination of abdominal organs and of the joints. I would like to emphasise its use in another field of medicine—namely, neurology. It frequently happens that a tremor is audible with a stethoscope when it is neither visible nor palpable, and this applies especially to the parkinsonian tremor. Auscultation of an apparently quiescent muscle in a case of suspected parkinsonism will often reveal a rhythmical "thudding" of a frequency approximately five or six to the second which is exceedingly characteristic. It may be found in any muscle; it is most readily discovered when present in the flat muscles of the back. When it is heard it confirms the suspicion that parkinsonism is present and the diagnosis may be made long before visible tremor is manifest or much in the way of rigidity. I am, Sir, yours faithfully,

Manchester, Oct. 18th, 1930. DONALD CORE.

[1] Brit. Med. Jour., 1928, i., 1.

THE SCIENCE OF MEDICINE AND CANCER RESEARCH.

To the Editor of THE LANCET.

SIR,—Lord Moynihan's philosophical survey of the science of medicine in THE LANCET of Oct. 11th is like an excursion on the moors or the mountains after close work in some stuffy office. There can be no question but that the principles which should underlie and inform the conduct of medical investigation have been much neglected. In calling attention to them and to the ways in which a campaign against disease may be hindered or lost by wrong tactics or wrong strategy, Lord Moynihan is doing us, as well as the public, an invaluable service.

That such is the case becomes obvious when we inquire into the history and present position of cancer research. That the research into the cause and nature of cancer is making no headway is obvious to everyone who has followed its drift since the movement began with the beginning of this century. No one can attribute this to any want of effort or of ingenuity or of perseverance on the part of those who have devoted themselves to this form of investigation. One need but glance at the mountainous size and to the excellent quality of the material thrown up by these diligent workers, as recorded in magazines and books, to be convinced that the fault does not lie in this direction. Indeed the very thoroughness with which the research has been carried out is in itself pretty convincing evidence that the error must be sought for elsewhere, and that it probably exists in some fundamental defect in the method of working.

One of the flaws referred to by Lord Moynihan as apparent in laboratory methods of research in general can readily be detected in cancer research. Carried away by the enthusiasm associated with the discovery of a novel and alluring form of inquiry, the early research workers made the very excusable mistake of magnifying the importance and prospects of their new method and of minifying the work of those who had preceded them. So much was this the case that those who followed them seemed to lose sight of the fact that the results of the nineteenth century methods of wide and extensive investigation on Baconian lines though slow were sure. They failed to give the credit that was due to the older workers for the really satisfactory progress that they had made in the knowledge of the structure, diagnosis and surgical treatment of cancer, nor for the distance they had gone towards a solution of the main problem of its origin and nature. Clinicians and pathologists working in concert with biologists, general practitioners, and other observers, had come to the conclusion, on the best of evidence, that cancer cells are not primarily the work of micro-organisms of external origin, but are the lineal descendants of cells native to the body in which the cancer grows. They had also decided that cancers are brought into being—caused—by certain non-specific stimulants or irritants. It was while following this clue and while engaged in the definition and classification of cancer-producing agents that the discovery was made that tumours can be artificially produced in rodents, with the result that the inquiry was almost suddenly diverted from the pursuit of cancer in man to the pursuit of cancer in mice.

If a mistake was made in belittling the work of our forbears, it was an equally serious mistake unduly to exalt the new form of research. Instead of keeping it in its place as an adjunct to large methods of

quiry, it took possession of the whole movement. t whereas it might have been a good servant it oved to be a bad master. Instead of working in nbiosis with hominal oncology, animal oncology came parasitic upon it, usurping for its own nourishnt the labour, ability, and money which would herwise have been given to the investigation of ncer in man. And now after 30 years of research that it has to show is a prodigious heap of facts l inductions got by much industry from animal rces, but, so far as man is concerned, no better n a tumour—an innocent tumour—useless to n, and most decidedly of no use to mice. *Parturiunt ntes, nascetur mus.*

Although innocent, this useless overgrowth of earch could not do otherwise than hamper and truct the progress of profitable search. For one ng the existence of a paid specialism must inevitably d to the formation of vested interests, and to a ntifical or dictatorial attitude on the part of its aries. Instincts of loyalty will be aroused in fence of research whenever it is attacked. Those hin the circle will be inclined warmly to welcome y work conducted on orthodox lines, but to look dly on or to become hostile to the unorthodox rk of "outsiders," the word not being used with a nplimentary intent. Books written as the outcome many years of careful, painstaking study, and erally regarded as not without merit, will be pantly or even venomously dealt with in what are med "reviews." On the other hand, much hter articles written by those within the circle l be lauded to the skies as consummate achievents of heaven-born genius, and not until two or ee years have passed by will those who have read se words of praise awake to the fact that the works ecstatically referred to have already passed into vion. Nor is this exaggerated bias necessarily crupulous, or the outcome of petty spite in the case and of gross flattery in the other. It is, doubt, to a large extent the natural expression abits of mind acquired in a laboratory atmosphere ng narrow, cramping methods of research.

f the same origin is another trait essentially cent, but calculated to be hurtful to scientific licine and to lower its prestige in the eyes of the lic. A movement dependent upon public funds hardly continue indefinitely without some measure success. Failing this, it is necessary that there ld be some other form of encouragement, best ll some expectation of impending success. Nor here reason to suppose that the time-honoured dient of the dangling of the carrot, although e use of so freely by research bodies, is consly intended to mislead the public. Undoubtedly a guileless manœuvre, the expression of a genuine tfelt belief in the ultimate success of the cause. nally, research or re-search—i.e., going over the e ground again and again—makes for needless tition, for stagnation, or for movements in circles. largely responsible for the doctrine that work ld be done for work's sake, and not with a view s utility—that the means are of more importance the end. It is this up and down or circular od, the method of the crank or the treadmill, h no doubt mainly accounts for the fact, otherwise ult to understand, that laboratory cancer research gone on for so many years, contentedly grinding data and spinning inductions without attention g drawn to the fact that it never produces any l results. And now, after a quarter of a century search, we can see to what a deplorable waste of y and ability and money this academic, aimless toil may lead. One useful, if negative, induction however emerges, which is that the problem of the causation of human cancer is not to be solved by experiments on lower animals in laboratories.

Lord Moynihan tells us that the contributions of experimental laboratory methods to the surgery of the stomach (and of other abdominal organs) has been almost negligible, if not positively hurtful; and he resents the superiority claimed by laboratory over clinical workers and their assertions of infallibility. Of the truth of this criticism and of the importance to humanity of right methods of investigation and of forming right perspectives the history and present state of cancer research seem to provide a convincing example.

I am, Sir, yours faithfully,

Reading, Oct. 20th, 1930. HASTINGS GILFORD.

IMPENDING ISCHÆMIC CONTRACTURE.

To the Editor of THE LANCET.

SIR,—In your issue of Oct. 11th Mr. H. P. Nelson describes a case of "obvious fracture at the lower end of the humerus," in which he could feel no radial pulse at the wrist. He reduced the fracture two hours later under an anæsthetic, bent up the elbow to less than a right angle, and strapped it to the chest. There was, he notes, still no radial pulse. After ten hours the whole limb had become swollen from the shoulder to the fingers, the patient was in great pain, and it appeared as if gangrene would ensue. An operation was performed at which it was found that the median nerve and brachial artery were nipped between the surfaces of the fracture. The fragments were gently levered apart and the artery and nerve released. The pulse returned, the swelling subsided, the patient recovered.

I venture to suggest that in no case of fracture of the lower end of the humerus, complicated by obliteration of the radial pulse, is manipulation likely to be attended with success—it may, indeed, be harmful—and that immediate operation should be done. Obliteration of the pulse suggests that the artery is nipped between the bony fragments, and as these have sharp and jagged edges the slightest movement may cause the artery to be torn or even completely severed. But if for some reason it is decided to take this risk and manipulate, then surely if this is not followed at once by return of the pulse at the wrist an operation must be done without waiting. In this case there was a further definite indication that all was not well, that there were soft structures between the fragments, because no crepitus could be felt.

The conclusion which Mr. Nelson draws from the case surprises me. He suggests that in similar cases, to prevent ischæmic contracture, there should be early incision of the deep fascia. Early incision here would have done not the slightest good; before there could be any relief the artery had to be freed from the compressing bones.

I am, Sir, yours faithfully,

PAUL BERNARD ROTH.

Welbeck-street, W., Oct. 17th, 1930.

RECRUITMENT FOR NURSING

To the Editor of THE LANCET.

SIR,—Dr. Esther Carling, in your issue of Oct. 11th, draws attention to the scarcity of entrants to the nursing profession. The fact is that nursing is in much the same plight as other industries, and like

them needs rationalising. Our nursing is acknowledged to be the finest in the world, yet we hear on all sides that its condition is deplorable. Nursing is influenced by the same economic and psychological factors which crop up whenever work has to be done and paid for. We have had cheap and docile labour, now refusing to be cheap any longer and questioning the sanctions for its discipline. Methods of work are too often antiquated, and costly because they waste material, time, and strength.

Dr. Carling says that the doctor depends more and more on the nurse, but what does the doctor want? Does he want a highly trained woman, an expert in that part of the prevention and cure of sickness which he delegates to her, or does he want someone who has spent the larger part of her training not in learning to nurse but in scrambling through the work of the hospital as best she can? Nurses themselves feel bitterly that too often they leave the training school over tired in mind and body, and with insufficient knowledge to be the doctor's right hand in coping with disease. This discontent spreads, and less and less are educated women willing to enter a profession which is so unsatisfying.

Rationalisation means that we determine the course of events and are not determined by them. Let doctors and nurses together convince the public and the hospital committees that the present system is uneconomic. First, we want to know what are the proper functions of a nurse. Secondly, we must decide the number of workers we require, and the grades to which they shall belong: so many for nursing the sick, so many for preventive and educational work. Finally, we must draw up the appropriate training, remuneration, prospects, and conditions of work which will ensure a sufficient supply of suitable labour and keep it contented. Every business firm does this, and scraps its old ideas and its old plant as need arises.

I may be criticised for applying economic conceptions to nursing, but when we have sucked the last bit of sweetness from such words as vocation and self-sacrifice, we still have to face the fact that we all have to work, and the labourer is worthy of his hire. If the economic conditions are such that workers and material yield their fullest product, we are much more likely to get, in addition, that precious part of human effort which neither wage nor salary can command or pay for.

I am, Sir, yours faithfully,

GLADYS B. CARTER, B.Sc. Econ.,
State Registered Nurse, Certificated Midwife.

University Women's Club, 2, Audley-square, W.,
Oct. 20th, 1930.

SOCIETY OF MEMBERS OF THE ROYAL COLLEGE OF SURGEONS.

To the Editor of THE LANCET.

SIR,—Plarr's "Lives of the Fellows," as your reviewer stated in your issue of July 26th, bridges a gap in medical history of great significance, that which divides the pre-Listerian from the post-Listerian surgeons. Much of the evolution of surgery was accomplished by those whose careers are recorded in these volumes. In these pages the biographer and even the philosopher will find many examples of the difficulty in deciding who have been our most useful leaders in a science demanding coöperation above all things.

But it is not in that exalted spirit that I ask for the publication of a few words. Preceding the alphabetical roll, published in the first volume, is a very interesting note, quoted from the pages of THE LANCET; it is the list of original Fellows elect in accordance with the provisions of the Charter 1843. These excellent people were 300 in numb and it may be noted that their places of residenc which are duly recorded, were largely in the provinc where few, if any, medical schools existed; 137 liv in London and of these 110 resided west of Temp Bar and 27 on the east side thereof.

Now I am one of those who, since the days wh Sir John Tweedy and Sir Victor Horsley led the mov ment, have considered that to ask for some dire representation of the Members on the Council of t College is reasonable and just. I have received wi respect the reply that, to earn their privileges t Fellows must pass a special examination, which giv to them an academic status fitting them to examiners and also teachers in the schools. In t analysis quoted above I notice that many of t original Fellows were not attached to teaching scho and I also learn from the calendar of the College, a from the statement made by the President at t annual general meeting last year, that the examine appointed to-day are not necessarily Fellows. plausible argument thus is lost to those who are opinion that the claims of the Members are i judged, and my hopes rise that success may atte the long-sustained movement for direct representati of Members on the Council.

At 41 annual general meetings this has be urged. In November last the Council passed t following resolution: "No evidence has been su mitted to the Council that the change in the constit tion of the College advocated in the resolution desired by any considerable number of the Memb of the College and the Council is therefore n prepared to reopen the question at present." response to this a poll of the Members resident the United Kingdom and the Irish Free State is bei taken by the Society of Members; it is still open b must close on Nov. 7th. More than 50 per ce replies have been received to the circular, and th replies are practically unanimous.

I ask all those who have not done so to send th voting cards promptly to the Hon. Secretary, Soci of Members, 25, Fellows-road, London, N.W. 3, a thus show interest in their College and afford to t Council the evidence required.

I am, Sir, yours faithfully,

ERNEST E. WARE,
Oct. 21st, 1930. President of the Society of Members

PS.—Those who have not received cards are ask to apply immediately to Mr. H. Pinto-Leite, t Hon. Secretary.

THE STETHOSCOPE.

To the Editor of THE LANCET.

SIR,—In his highly interesting address on t stethoscope, published in this week's issue of T LANCET, Dr. R. A. Young favours a chest-pi made of wood or ivory rather than of metal as bei warmer and more comfortable for the patient. Ma point out the superiority of celluloid to any of th materials? It is distinctly warmer even than wo and has the additional advantage of being alm unbreakable. I still have two in use, one of t ordinary size and a smaller one for children, wh were made for me by Mr. J. H. Montague many ye ago and have outlasted innumerable ear-piec they are of the bell-shape which I always thi secures a better contact with the skin than t ordinary trumpet end.

I am, Sir, yours faithfully,

Exeter, Oct. 18th, 1930. THOS. WHIPHAM

PANEL PRACTICE.

General Practitioner Service.

a moment when the annual conference of local cal and panel committees is meeting in London r the chairmanship of Dr. H. J. Cardale to ss the work and status of the practitioner under Insurance Acts, it may be of interest to recall is being said outside about his practice and s. It has, we fear, become rather the fashion ieer at the scheme of medical benefit under the rance Acts. Certain recent public utterances appeared to disparage the scheme not only use it stops short at a general practitioner ce and is incomplete as such, but because the ce itself is not worth the money expended upon times of financial stress such as the present. Minister of Health recently said it was "a torso scheme" unless you could be certain that the ed person was going to have available all the resources of medical knowledge and medical In his opening address at St. George's Lord ell pictured the panel doctor as "a sort of medical employed, or at any rate paid, by commercial tutions"; he must prescribe in accordance with in rules, and the less he did for his patients asier the time he had. Most of the panel doctor's us cases, and, he added, a good many that were serious, were passed on to the out-patient depart- of the voluntary hospitals, London alone ing every day an average of 1000 out-patients ach of its 12 teaching hospitals, a large pro- on of whom were on the panel. It would be esting, he said, to discover how many of the 00,000 panel patients were treated largely at expense of the charitable public and for what ses. We on our part would like to know, too, many of these were referred to hospital with rs from their doctors and how many went to itals on their own account. Various attempts been made to convert hospital out-patient rtments to their proper function of consultative res, but these all break down if the secretary reasurer of a voluntary institution in appealing ie charitable public requires impressive statistics ing how many patients are treated at his insti- n every minute of the day.

ow is the practitioner to treat his serious cases uately at home when home conditions and the of skilful nursing jeopardise the successful of his treatment? Even when laboratory and altative facilities have been provided, institu- l treatment will still be necessary in the interests of the patient and the community. When, ever, the new scheme of local hospitals is fully loped, the practitioner will be eager enough to his part in the provision and treat his patients ospital himself. It was the veteran ophthalmo- t, Prof. Priestley Smith, who in his presessional ess at Birmingham had a truer vision of a general titioner service. It was, he said, the practitioner saw the habits of the people and the beginnings isease, who could step in early and prevent hief, who when special skill was required knew t sort was needed and where to get it. In his ion the health of the community in the future ld lie largely in the hands of the general practi- er. The practitioner has been spoken of as a ost, and what more useful function could he e? Disease is the divergence from the path of health, and the practitioner's highest duty is to discover the whereabouts of the lost traveller and help to put him on the right road again.

OBITUARY

JAMES PAUL BUSH, C.M.G., C.B.E., Ch.M. Bristol.

WE much regret to record the death of Colonel Paul Bush which occurred on Oct. 7th at Clifton in the seventy-fourth year of his age. Alike as clinical surgeon and an authority on military medicine it is a professional leader whom death has removed from among us.

James Paul Bush was born at Brislington in 1857, the son of Major Robert Bush. He was educated at Clifton College and the medical school in Bristol, completing his curriculum at University College, London. He qualified M.R.C.S. Eng. in 1881 and L.S.A. the following year, and, returning to Bristol, became house surgeon at the Royal Infirmary and demonstrator of anatomy in the Bristol Medical School, where he had himself previously won gold medals for distinction both in medicine and surgery. Then followed three years as resident medical officer at the infirmary; in 1885 he was appointed assistant surgeon to the institution, and four years later full surgeon. He thus had been for over 30 years an honorary officer of the infirmary when, in 1913, having reached the age limit, he was elected honorary consulting surgeon. In 1912, with the founding of Bristol University, he received the honorary degree of Ch.M. His work at the infirmary commanded universal esteem; he was a fine general surgeon, progressive in view, and quick to appreciate developments and to employ them practically. He did not write much, save in the columns of the *Bristol Medico-Chirurgical Journal*, to which, especially early in his career, he was a constant contributor, but occasional communications to *The Lancet* and the *British Medical Journal* bore the imprint of his practical knowledge.

Paul Bush had a fine military record. From boyhood he had been a Volunteer, and had served as surgeon in a battalion commanded by his father, so that it was natural that he should be among the earliest volunteers for medical service on the outbreak of the South African War. He was appointed surgeon to the Princess Christian Hospital of the Natal Field Force, of which he became commandant, and later he received charge of a large hospital ship, the *Lismore Castle*, as P.M.O. The efficient manner in which he discharged these duties was recognised by Lord Roberts, and Bush received the C.M.G. On the institution of the Territorial Force he was appointed to the command of the Second Southern General Hospital. Here his keen interest in military medicine, and his general foresight, proved of great value, for six years later, when the European War broke out, the Second Southern General Hospital was found to be fully equipped in a remarkably short space of time, with over 500 beds ready for occupation, situated partly in a wing of the Royal Infirmary and partly in the poor-law hospital at Southmead which had recently been erected. As a commanding officer he was seen immediately to be in his place; his scientific knowledge was sound, while his administrative ability was great and guided by considerable personal experience of the events of war. In the third year of the struggle he went to France in command of Number 56 General Hospital,

which was located at Etaples, and, it may be remembered, was subjected frequently to severe bombing. He remained in command until late in 1918 when he was appointed A.D.M.S. to the second area of the Southern Command. This excellent record of service was acknowledged when he was awarded by the King of the Belgians with the Order of Officier de la Croix de Courage. He was also appointed C.B.E.

Although so identified with the Royal Infirmary Colonel Bush found time for valuable association with other public affairs. He had been chief surgeon to the Bristol post office and Bristol police, and was a past president of the Police Surgeons' Association. He was hon. consulting surgeon to Almondsbury Memorial Hospital and Pontypool Hospital, vice-president and member of the Council of Epsom College, member of Council of the International Surgical Society, and ex-president Bath and Bristol branch, British Medical Association.

Colonel Bush married in 1887 Laura Annie, daughter of the late John Robertson, of Colac, Victoria, Australia, and leaves a widow, a son, and a daughter.

MEDICAL NEWS

University of Oxford.

On Oct. 16th the following degrees were conferred :—

D.M.—Janet M. Vaughan.
B.M.—Amy C. E. Clarke and Victoria M. Robinson.

University of Cambridge.

On Oct. 17th the following degrees were conferred :—

M.D.—E. G. Holmes.
M. Chir.—C. I. Tuckett.
M.B. and B.Chir.—A. J. Johnson, G. A. Eason, and G. O. Barber.
M.B.—*W. J. H. M. Beattie, A. M. Roberts, A. H. Birks, and I. J. Franklen-Evans.
B.Chir.—*A. H. Gurney and A. F. Alsop.

* By proxy.

Scottish Conjoint Examining Board.

The examinations of the Board of the Royal College of Physicians of Edinburgh, the Royal College of Surgeons of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow, have just concluded at Edinburgh. Out of 78 candidates entered, the following passed the final examination and were granted the licentiates' diploma.

Jean G. Clark, W. G. Harding, Frances K. Harding, David McNair, R. W. van Cuijlenburg, Vytilingam Sivalingam, D. D. Steele-Perkins, K. L. Loh, W. G. Pennington, W. P. Shand, M. K. Thiruvilangam, Y. M. E. R. Abeyesundere, M. S. Golding, W. E. S. Winn, Gavin Brown, J. B. D. Oliver, A. J. Abeyesundere, Leonard Baumann, K. C. S. Menon, J. L. K. Lawson, N. Y. Labib, H. L. Ong, M. N. Rozdon, R. T. A. Morrow, A. I. Foster, and A. G. Daly.

Royal College of Surgeons of Edinburgh.

At a recent meeting of the College, with Dr. James Haig Ferguson, the President, in the chair, the following 48 successful candidates (out of 106 entered) who passed the requisite examinations between July 10th and 19th were admitted Fellows :—

Ian Aird, Frederick Alfred Blackwood, Reynold Harold Boyd, Alexander Mackay Calder, Geoffrey Alleyne Cook, Mehra Maneckji Dalal, Willem Frederik De Villiers, Joseph Butler Dobson, John Cornell Drummond, John Phillips Fairley, Ivor Burberow Gardiner, Maynard Atkinson Gerrard, St. George Bernard Delisle Gray, Brenda Gladys Hallett, Anthony Morrice Hendry, Reginald Manson Hill, Lionel Lazarus Hurwich, John McQueen Johnston, Alan Stewart Johnstone, Ramrau Annappa Kalle, David Glyn Lamond Lackie, Robert Mitchell Marshall, David Skene Middleton, John Reginald Miller, Hugh Glasson Mitchell, Henry Newman Mortensen, Geoffrey Moulson, Allan Henry Mowat, Ratanshaw Pirojshaw Munshi, Norman Arnold McCormick, Donald Murray Mackay, Clarence Wilmott Olsen, Lloyd Reath Olver, Frank Young Pearson, Maitland Boyd Perrin, Archibald Ronald, Gordon Islay Scott, Angus Leslie Sutherland, Dick Brasnett Sutton, John Swan, Charles Frederick Swinton, Bhagat Ram Tandan, Robert Lindsay Turner, Gobind Vaishnavi, Arthur Walbank, Harry Caldecott Warner, and Brian Wellingham Windeyer.

Dr. Ferguson was re-elected President for the ensuing year, Mr. Alexander Miles Vice-President, and Mr. J. W. Struthers Secretary and Treasurer.

Bridge of Allan Spa.

Sir Humphry Rolleston will open this spa on Oct. 30 at 12 noon.

Chelsea Clinical Society.

The annual dinner will take place at the Hotel Rembrand Thurloe-place, London, S.W., on Tuesday, Oct. 28th, 7.30 for 8 P.M. The President, Mr. F. J. McCann, will in the chair.

The Semon Lecture.

Mr. V. E. Negus will deliver the Semon Lecture 1, Wimpole-street, on Thursday, Nov. 6th, at 5 P.M. (tea 4.3 The title of the lecture is Some Observations on Semo Law (derived from evidences of comparative anatomy a physiology).

Halley Stewart Lectures.

Four free lectures on Health and Social Evolution w be given by Sir George Newman at the Memorial Ha Farringdon-street, London, E.C. (Ludgate Circus), Nov. 4th, 6th, 11th, and 13th, at 6 P.M. The address the Halley Stewart Trust is 32, Gordon-square, W.C.1.

London School of Hygiene and Tropical Medicin

The programme of special lectures arranged by Pr W. W. Jameson at this school in connexion with stu for the Diploma in Public Health has now been issued. Th lectures are open to all interested in public health. T names of the lecturers and their subjects will appear in Medical Diary.

Physical and Psychological Defects.

On Nov. 13th and 14th the Invalid Children's Aid As ciation and the Central Council for the Care of Cripples w hold a joint conference on Problems relating to th Handicapped by Physical and Psychological Defects. T conference will meet at the Drapers' Hall, Throgmort street, London, E.C., and the opening address will be giv by Mr. Arthur Greenwood, Minister of Health. The cha men for the four sessions will be Sir Robert Jones, George Newman, Lord Amulree, and Dr. Ralph Crowl The speakers will include Dr. S. J. C. Holden, Dr. F. Poynton, Dr. F. Carey Coombs, Dr. B. E. Schlesinger, J. F. Ward, Dr. P. C. Varrier-Jones, and Dr. G. A. Aud

London Hospital Dinner.

Presiding over the old students' dinner at the Trocad Restaurant on Oct. 16th, Sir Wilfred Grenfell spoke of early days at the London Hospital and especially of Frederick Treves who had first persuaded him to go out surgeon on the North Sea mission. It was difficult in th days, he said, to be associated with anything religious even altruistic, and on returning to London in the train af presenting prizes to skippers whom the speaker had trai in ambulance work, Treves was greeted by a fellow travel with a single curt sentence : " Doing a little more damn advertising, I see." After expressing regret that no had yet written Treves's life, Sir Wilfred went on to sp of old friends at the hospital He was glad to see bes him Dr. Percy Jackson and Dr. Arthur Wakefield, both whom had worked on the Labrador Coast. They co testify that medicine over there was on the same lines it was in England. Dr. Lewis Smith referred to chairman's early achievements as footballer, boxer, a oarsman, and described him as always an outdoor man, hard as nails. Research in the Medical College revealed t the student Grenfell had attended as post-mortem clerk only two occasions ; on the other hand, he had 99 matern cases to his credit—surely a strange figure ? Dr. Lewis Sm recalled his own experiences as surgeon on the Deep Mission to Seamen, when he was out of sight of land eight weeks and grew a beard. Sir Wilfred's achieveme in Labrador amazed him. No one who had not seen t country could have any idea what it meant to persev there, in a land bigger than France and Britain combin with 1,100 miles of seaboard. It was not surprising t Grenfell's name was one to conjure with in America a that everywhere he was held in respect above other m This " dynamo in trousers," as he had been called, was whose motto was always Safety Last.

After Sir Wilfred had responded to the toast of his heal drunk with music and sincerity, there was a general dema for a speech by Dr. Russell Andrews, who replied w further reminiscences of Treves. Dr. Robert Hutchi (answering to the toastmaster's call of " Mr. Hutchinson said that, like the Scots minister, he must just put faith in Providence, and next time he would come bet prepared. But not even the signal triumph of Hutchison's faith persuaded Mr. Russell Howard to upon a similar venture.

Medical Golfing Society.

The autumn meeting was held at Littlestone on Oct. 18th and 19th, 75 competitors taking part. The results were as follows:—

Singles *v.* Bogey: 1st, Mather Thomson (2 up); 2nd, A. Galletly. Foursomes *v.* Bogey: D. J. O'Keeffe and H. W. Molesworth (all square) after a tie with Commander Rusack and A. Galletly. Canny Ryall Cup: 1st, D. Ligat, 73 net; 2nd, Eric Dobson and T. A. Torrance, 74 net; Scratch Prize: T. A. Torrance, 71. Veteran's Cup: D. Ligat.

London Irish Medical Golfing Society.

The autumn meeting was held at Sandwich on Oct. 11th. About 65 players took part. The results are as follows:—

Captain's Prize (best gross scores for 36 holes): E. T. Wright, 163; D. J. O'Keeffe, 165; A. G. Walsh, 168.

Cahill Trophy (best net scores for 36 holes): F. J. Holmes (18), 155; R. H. Jones (17), 156.

Lett Cup (foresomes): D. S. Gordon and G. Campell, 3 up; A. G. Walsh and W. Macauley, 1 up.

O'Malley Cup: G. Sneyd (14), 2 up; R. Seale (8), 1 up.

Canny Ryall Cup: J. Maybury (16), 72; E. M. Donahue (15), 75; M. J. Smythe (6), 75.

Medical Diary

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
MONDAY, Oct. 27th.—8 P.M., ODONTOLOGY. Presidential address: Mr. Carl Schelling: The Odontological Society in the last Decade of the Nineteenth Century. Members are invited to contribute matters of interest arising from the paper.
TUESDAY.—5 P.M., MEDICINE. Discussion on Research in Clinical Medicine. Openers: Dr. J. A. Ryle, Prof. H. Moore, and Dr. Helen Mackay.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
MONDAY, Oct. 27th.—8.30 P.M., Discussion on The Prophylactic and Therapeutic Values of Vaccines, to be introduced by Sir Almroth Wright.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, Oct. 27th to SATURDAY, NOV. 1st. MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W., Special M.R.C.P. Lecture at 8.30 P.M. as follows:—Tues., Dr. Donald Hunter: Prevention of Disease in Industry. Pathogenesis and Treatment of Lead Poisoning. Fri., Dr. Maurice Cassidy: Coronary Occlusion. Mon., at 4 P.M., a free lecture by Sir James Purves-Stewart: Diagnosis and Treatment of Disseminated Sclerosis.—MILLER GENERAL HOSPITAL, Greenwich, S.E. Thur., 11 A.M., Mr. R. C. Ledlie: Injection Treatment of Varicose Veins. Free demonstration.—HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C. Special Course consisting of lectures, demonstrations, operations from 10 A.M. to 1 P.M. daily.—ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, 234, Great Portland-street, W. All day course.—ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, Broad-street, Holborn, W.C. An afternoon course.—Further particulars from the Fellowship of Medicine.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, Oct. 27th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose and Throat Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Throat, and Ear Clinics. Operations.
FRIDAY.—10.30 A.M.: Ear, Nose, and Throat Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Children's Diseases Clinics. Operations.

NATIONAL HOSPITAL, Queen-square, W.C.
MONDAY, Oct. 27th.—12 noon, Dr. Greenfield: The Neuroglia. 2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Mr. Williamson Noble: Canges in the Visual Fields.
TUESDAY.—2 P.M. Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Bernard Hart: Some Aspects of the Psychoneuroses.
WEDNESDAY.—2 P.M., Dr. Purdon Martin: Out-patient Clinic.
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Mr. Just: Physiology of the Vestibular Apparatus.
FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Sir Percy Sargent: Spinal Tumours.

KING'S COLLEGE, Strand, W.C.
THURSDAY, Oct. 30th.—5 P.M., Mr. J. A. Hewitt, Ph.D.: Metabolism of the Carbohydrates and Fats (third of four free lectures).

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.
THURSDAY, Oct. 30th.—9 P.M., Dr. Terence East: Some New Points in the Treatment of Cardiac Disease.

UNIVERSITY COLLEGE, Gower-street, W.C.
MONDAY, Oct. 27th.—5 P.M., Dr. H. P. Gilding: The Reticulo-endothelial System (third of four free lectures).

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION St. James' Hospital, Ouseley-road, Balham, S.W.
WEDNESDAY, Oct. 29th.—4 P.M., Mr. V. Zachary Cope: Demonstration of Surgical Cases

ST. PAUL'S HOSPITAL, Endell-street, W.C.
WEDNESDAY, Oct. 29th.—4.30 P.M., Mr. Stanford Cade: Some Points on Radium Therapy.

CHADWICK PUBLIC LECTURES.
THURSDAY, Oct. 30th.—5.15 P.M. (in the Hastings Hall, B.M.A. House, Tavistock-square, W.C.), Dr. Gerald Slot: Rheumatism, Cause and Prevention.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
WEDNESDAY, Oct. 29th.—4 P.M., Lt.-Col. J. A. A. Pickard: The Prevention of Street Accidents.
THURSDAY.—4 P.M., Dr. C. P. Blacker: Sterilisation of the Unfit.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
TUESDAY, Oct. 28th.—4.15 P.M., Dr. A. Ramsbotton: Visceroptosis.
FRIDAY.—4.15 P.M., Dr. R. S. Davidson: The Complications and Treatment of Puerperal Fever.

ANCOATS HOSPITAL, Manchester.
THURSDAY, Oct. 30th.—11 A.M., Dr. G. J. Langley: Clincial Demonstration. 4.15 P.M., Dr. W. J. S. Reid: Disorders of the Autonomic Nervous System.

Appointments

BROADFOOT, J. M.D., Ch.B. Glasg., has been appointed Medical Officer of Health, Inverness.

DIXON J. H., M.D., C.M. Edin., a Medical Referee under the Workmen's Compensation Act for the District of Marylebone County Court.

GARLAND, H. G., M.D. Leeds, M.R.C.P. Lond., Resident Medical Officer, Leeds General Infirmary.

MACMURRAY, S. M., M.B., Ch.B. Glasg., and WHITEFORD, C. M., M.B., Ch.B. Glasg., Assistant Medical Officers of Health, Paisley.

MACRAE, A., M.D., Ch.B. Edin., and HIGHAM, J. P., M.B., B.S. Durh. (extended appointment) Medical Referees under the Workmen's Compensation Act for ophthalmic cases in the districts of Barnard Castle, &c., and Sunderland County Courts.

NELSON, H., M.B., Ch.B. Dub., Medical Officer, Clogher Dispensary.

NELSON, MARGARET M., L.R.C.P. & S.I., Medical Officer of Clogher Union Hospital.

SMITH, H. S., M.R.C.S., L.S.A., Certifying Surgeon under the Factory and Workshop Acts for Littlehampton.

Births, Marriages, and Deaths

BIRTHS.

PENNY.—On Oct. 13th, at Roxeth Vicarage, Harrow, the wife of Dr. H. J. Penny, of a son.

TERRY.—On Oct. 7th, at Nyaunghla, Upper Burma, the wife of Dr. Gordon S. Terry, of a son.

MARRIAGES.

BRIGG—JACKSON.—On Oct 16th, at Radley Church, Denis Anderton Brigg, M.B., to Eva Katharine Mary, elder daughter of Rev. A. A. and Mrs. Jackson, of Radley.

CROSBIE—MC'LEISH.—On Oct. 11th, at All Souls' Langham-place, Surgeon Lieut.-Comdr. John H. B. Crosbie, R.N.B., Chatham, to Alexandra Victoria, daughter of Mrs. Mc'Leish of Sydney.

DEATHS.

EXHAM.—On Oct. 19th, at Stafford House, Market Drayton, Arthur Richard Frederic Exham, M.D., aged 73.

HARVEY.—On Oct 13th, at 43, Holland-street, John Owen Harvey, M.D.

HAYES.—On Oct. 19th, Francis George Hayes, M.R.C.S., L.R.C.P., aged 75 years.

JAMES.—On Oct. 18th, at St. Mawes, Cornwall, Frederick Charles JAMES, M.B., aged 59.

MOTTRAM.—On Oct. 14th, at The Grange, Salhouse, Norfolk, Guy N. Mottram, M.R.C.S., L.R.C.P., of Preston, Lancs, aged 56.

PAYNE.—On Oct. 14th, William Henry Payne, M.D., aged 60.

WITHERS GREEN.—On Sept. 25th, at Sandy Bay, Hobart, Tasmania, Alfred Withers Green, M.R.C.S., L.R.C.P., aged 76.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

INDUSTRY AND THE PUBLIC HEALTH.*

BY A. MASSEY, M.D. LEEDS, D.P.H.,
MEDICAL OFFICER OF HEALTH FOR THE CITY OF COVENTRY.

HEALTH is indispensable above all to those involved in the rigours and competition of modern industrialism. The Romans, 2000 years ago, knew the value of communal hygiene, and employed officers whose duties were concerned with health and sanitation. It is strange that in this country the history of organised health endeavour goes back but 60 or 70 years. The names of Chadwick and Simon readily suggest themselves among the pioneers. Some of the earliest efforts in public health and social welfare were directed towards factory hygiene and against child labour. The Public Health Act of 1875 marked the widening dawn of the health movement, and the last half century has seen a mass of legislation on behalf of communal health. The achievements of the public health service during this decade can be accurately measured by a careful consideration of comparative vital statistics; suffice it to say here that the average duration of human life in this country has been extended by some nine years since the service began generally to operate. Moreover, this increased span is spent in greater physical comfort than was at one time possible or even conceivable.

The activities of the health officer were formerly concerned with the environment rather than with the person. To-day the person receives first attention, although environmental hygiene must needs continue an important concern. Health work in factories is similarly divisible into personal and environmental, although the two are closely interconnected. Man is largely the slave of his surroundings. His mentality and outlook are largely influenced by them, as are his physique and state of health. It is better to adjust environment to man than man to environment. When it is borne in mind that an artisan spends one-third of his effective adult life in his place of work, the importance of a clean, light, and airy factory is readily apparent. It is clearly to the interests of the industrialist to accord a cheerful and sanitary environment to his employees. Such provision is likely not only to conduce to health but also to contentment. Industrial unrest is, in some measure, a psychological reaction to depressing environment.

Occupational Selection.

Occupation exercises a degree of selection on its entrants. It is natural that the physically subnormal should turn to vocations calling for little in the way of bodily strength. For this reason coal miners, for example, despite the health hazards with which they are beset, are generally men of good physique. Discrimination by occupation alone, however, can be but an approximate rule.. A medical system of scientific selection of employees is the best way of preventing ill-health consequent upon unsuitable work.

The engineering and motor industries are not free from occupational health hazards, accidental injuries apart. Sand-blasting and grinding are processes involving the emanation of sharp particles of dust which, inhaled, are liable to cause abrasion of the respiratory tissues with resultant bronchial or lung disease. My department not infrequently meets with cases of phthisis in sand-blasters. In some of the Coventry works fine shot is used in lieu of sand in the sand-blasting process, and it is possible that this might mitigate the danger of respiratory disease. Lead poisoning may arise from car-body painting, and chrome poisoning from chromium plating. Cellulose-spraying may give rise to benzene poisoning, and it is possible that the inhalation of certain other constituents of cellulose over a period may cause respiratory and cardiac troubles. All possible preventive measures against these contingencies are in operation by order of the medical department of the Home Office.

Monotony of work is a potent cause of nervous breakdown. This is well illustrated by experience in certain large motor works in America, where systems are in operation which impose on groups of workers the circumscribed duty of fitting one small part to each of the embryo cars which are passed in line before them. There is no mental satisfaction in such work, and the engineer's constructive instinct finds no scope. This happily does not apply to the same extent in British motor works. The matter is nevertheless of considerable interest. Small changes from time to time in the nature of a man's work are most likely to obviate the contingency of nervous breakdown.

The Importance of Common Illnesses in Industry.

Industrial medicine has hitherto embraced chiefly the matters of factory environment, occupational diseases, and accident prevention. It is well, however, in considering the incidence of physical disability in factories to preserve a due sense of proportion. It is everyday sickness, rather than occupational disease or accidental injury, that constitutes the greatest time-loser in groups of occupied persons. It is probably true to say that, in the aggregate, for every week of working time lost through occupational or accidental damage, a half-year's suspension from work results from ordinary or epidemic sickness. The visitation of influenza in early 1929 is a case in point. It is in this connexion that great scope presents itself for more organised preventive effort. During 1928 in this country a total of 26,750,000 weeks' sick benefit was recorded, involving payment of £15,600,000. Coventry had an insured population, as at June, 1929, of 67,984 persons. On the basis of the above, this means the annual loss in the city, through sickness, of 704,314 working days, or an average of 10·36 days of sickness on pay per year per insured person. Sickness benefit does not begin until the fourth day of illness, so that the average period of suspension from work in a year per insured person totals 13·36 days. The nature of the most common illnesses causing this serious loss of productive time are: colds, bronchitis, and catarrhal conditions, 21·37 per cent.; digestive troubles, 12·61 per cent.; rheumatism, 9·78 per cent.; injuries and accidents (not necessarily sustained at work), 9·78 per cent.; septic skin conditions, 8·43 per cent.; influenza, 7 per cent.; nervous troubles, 5·9 per cent.; and neuralgia, headaches, and debility, 5·0 per cent. Many of these conditions are largely preventable, and in work to that end the interests of the employer are directly involved. A maximum return for wages paid can only be obtained from a healthy staff. Output is proportional to the available mental and physical energy of the operative. Apart from humanitarian considerations, then, there is a strong economic inducement to the employer to provide medical and social services for his employees. In these days one hears so much of alleged divergent interests as between employer and employee, that it is a real pleasure to present a case which is accepted as advantageous alike to master and man.

Welfare Schemes.

In the factory, as out of it, health education is of fundamental importance. Whatever is done by the various health agencies for the individual, he himself is not uncommonly the final arbiter in regard to his state of health. In short, one can prescribe medicine

* Based on a paper to the Coventry Engineering Employers' Association.

for a man but one cannot make him take it. It is by educative work only that the man in the street—or factory—can be induced to coöperate with those working on his behalf. It is clear that health propaganda should be a feature of the industrial welfare scheme. More might be done on these lines.

Welfare schemes are admirably conducted in certain works. I rather think that a defect in the system is the want of a more defined contact between welfare and preventive work in the factory and the work of the city health department. In epidemic times, especially, such liaison is indispensable. The machine of preventive medicine is complete in respect of its component parts. Whether or not these parts are correctly assembled—as, of course, they must be to ensure smooth and efficient working—depends upon the degree of coöperation between the various workers in similar fields. Home hygiene and factory hygiene, for example, lose value by divorce one from the other. Further, some degree of continuity in the personal side of health work, through the child welfare and school medical schemes into factory life, is desirable.

A Threefold Aim.

Industrial medicine seeks to find complete answers to the following questions, viz. :—

1. How are disease and accidents among workers to be, as far as possible, prevented ?
2. How are healthy employees to retain their mental and physical capacity ?
3. How are the sick to be treated in order that they may return in health, with reasonable expedition, to productive work ?

Let us assess the present position. Environmental hygiene in the factory is provided for. Reasonable safeguards in respect of accidents and occupational health hazards are in operation. The last-named contingencies, however, are not more important than those of ordinary and epidemic sickness in the matter of loss of output and working time. The latter fact rather indicates the lines of future development in industrial welfare work. In this connexion, scientific selection of employees has far-reaching possibilities. Health education in the factory is fundamental, for only by this means can the individual be induced to help himself by ready compliance with welfare measures. Liaison between the factory welfare scheme and the local health service is eminently desirable. Great opportunity for medical endeavour is here presented—preventive, curative, and educative.

I cannot miss this opportunity of reference to the matter of smoke abatement. Preparations are now in progress to celebrate in 1931 the centenary of Faraday, the father of electricity. Faraday was an important, indirect, pioneer in public health. He made clear ities possible in industrial areas. I need not enlarge in the many ways in which smoke is injurious to health ; suffice it to say that atmospheric pollution is a detrimental factor of the first importance. Smoke means incomplete combustion of fuel, and thus represents financial waste. On economic and health grounds, therefore, there is every inducement to the industrialist to secure smoke abatement.

Disraeli said that public health is the foundation on which repose the happiness of a people and the power of a nation. To apply this to my present thesis, I would say that health in the factory is the foundation on which repose the happiness and efficiency of the employee and the competitive power of an industry.

SOCIETY OF RADIOGRAPHERS.

PRESIDENTIAL ADDRESS.

THE Society of Radiographers was founded in 1920, and until that time radiographers had been a scattered body suffering under many disadvantages. Mr. C. L. Finch, the newly-elected president, in the course of his address delivered on Oct. 15th at the Reid Knox Hall, Welbeck-street, said that a great debt was owed to the Institute of Electrical Engineers which had undertaken much of the preliminary labour required for the legal constitution of the Society of Radiographers. He regretted that the Institute was no longer represented on the council of the Society, and hoped that in the future this would be remedied. In 1927 the Society had become affiliated to the British Institute of Radiology. Speaking of the Articles of Association, he said that the first of these required that the Society should promote the science and regulate the practice of radiography, and this ideal had inspired the papers and discussions at the monthly meetings. An important point gained by the activities of the Society was the inclusion of radiography as a dangerous occupation under the Workmen's Compensation Act. Examinations in radiography were held under the auspices of the Society not only in England, but in Australia, South Africa, China, and Ceylon. Reports of the work of the Society and of individual members were published in the official journal, and a section of the *British Journal of Radiology* was devoted to radiography ; recently the American Society of Radiographers had opened the pages of their journal to the British Society. Up to the present it had been possible to do little to encourage research, but it was hoped that later grants and scholarships might be given. A library and a museum were maintained for the use of members. The formation of a benevolent fund was as yet beyond the means of the Society, but it was in the minds of council and would not be forgotten. It had not been necessary for the Society to build an institute up to the present, since the Institute of Radiology lent a room for its meetings. Investments had now reached the sum of £1400, a good record for an existence of only ten years.

THE DEVELOPMENT OF RADIOGRAPHY.

Mr. E. C. Jerman, president of the American Society of Radiographers, delivered an address on the development of radiography, not from the point of view of equipment and practice, but from that of technique. Improvement of equipment, he said, meant improvement in technique. At first the radiologist had been his own radiographer, but this plan had been subject to many disadvantages, and had met with little financial success. These workers had been pioneers. As time went on, non-medical assistants were introduced to help with the equipment, and as the value of X rays became more evident, the X ray technician or radiographer was introduced. The radiologist was, of course, the leader of this group of workers, but the best results were only obtained by close coöperation of all its members. Gross pathology could be shown by ordinary radiography, but for finer pathology radiography must reach a high standard. More than a hundred factors were involved in the production of a good radiogram ; in the early days guess work could not be excluded, and radiologists worked on what he might term the " hunch " method. The increasing volume of work led to delegation of a part to lay workers, and as these required training, there was for a time a dearth of assistance. Fifteen years ago he had been asked to help to solve this problem of training ; he had found it could best be done by grouping the various points in technique under different headings, and teaching one group at a time. Alterations had to be made in equipment ; measurements of time and dosage required to be more accurate ; fractional-second time switches were introduced and a better method of measuring voltage. It was realised that the price of inaccurate equipment had to be paid many times in delay, and reduction in quality of the work done. Faulty dark-room technique often wrecked good operative work. Methods for the protection of operator and patient, the position of the patient, and the effect of emotion in the patient had all to be given due consideration. The patient was, in any case, a variable factor, and deviations from the normal were inevitable and could not be anticipated ; it was for this reason that rule-of-thumb methods could not be employed in radiography. Much yet remained to be done ; there was opportunity

for wide research in radiography; manufacturers must produce cheaper and better equipment; radiographers must continue to follow closely the instructions of the radiologist, and the radiologist must coöperate with his co-workers to produce the best results. The elimination of frauds, shams, misrepresentation and incapacity, and the establishment of better coöperation would improve the standard of a branch of medical work which must inevitably increase in volume. The customs of the Society of Radiographers in the United States differed a little from those of the English body; the local organisations met once a month at some place where equipment was available. Any technical problems encountered by the members were then attacked, and members of the Society of Radiologists often attended to advise and assist. On one occasion members brought their screens to the meeting to test them; many defects were detected and an examination of time-switches at another meeting brought to light several gross errors. On a third occasion, every member was asked to produce a beetle or other insect at the meeting, and interesting radiograms were obtained. X ray work was, of course, invaluable in museums, since the objects could be magnified to eight times the original diameter.

ACCIDENT OUTFIT FOR MOTORISTS.

THE medical motorist is often unable to do much for the victims of an accident because he lacks the dressings and applications urgently required. The situation of the workman thus deprived of his tools may be very distressing, and as a small insurance against avoidable disaster it would be well if every motor-car were furnished with a first-aid outfit.

Messrs. C. J. Hewlett and Son, Ltd. (35, Charlotte-street, London, E.C.2), have made up a boxful of things a practitioner is likely to find useful if suddenly called upon to attend on road casualties. Their Motor Car Emergency Case is made of japanned tin and is small enough to be stowed away in a car-pocket or in the tool-box. It contains the following requisites:—

Sal volatile in 1-oz. stoppered bottle; 1 oz. absorbent wool; 1 oz. surgeon's lint; tin of vaseline; glass pencil containing iodine tincture, in metal case; tin of rubber adhesive plaster 1 yd. by 1 in. wide; tin of assorted sizes safety pins; pair of scissors, blunt and sharp points, 5 in. long; pair of artery forceps, which can also be used as tweezers; tourniquet; bleached water dressing bandages, 2½ in., 2 in., and 1 in.; ½ yd. packet acriflavine or picric gauze; 1 oz. ung. terebeni co., for burns, in china pot; packet of battiste, 9 in. by 9 in.

This collection which is sold at 18*s.* 6*d.*, can, of course, be modified by the owner to suit his own views but it forms the basis of a valuable and convenient outfit.

Vacancies

For further information refer to the advertisement columns.

Bangor, Caernarvonshire and Anglesey Infirmary.—H.S. £200.
Barbados.—Chief Medical Officer. £1000.
Barnsley, Beckett Hospital and Dispensary.—Jun. H.S. £140.
Bath, Royal United Hospital.—Two Hon. Surg.'s.
Birmingham City.—Asst. M.O.H. for Maternity and Child Welfare. £600.
Birmingham, Dudley-road and Selly Oak Hospitals.—Asst. Pathologist. £500.
Birmingham, Ear and Throat Hospital, Edmund-street.—4th H.S. to Out-patient Dept. £150.
Birmingham, P.H. Dept., Tuberculosis Centre.—Asst. M.O. £400.
Birmingham, Selly Oak Hospital.—Surgeon. £700.
Bradford, Royal Eye and Ear Hospital.—Jun. H.S. £150.
Bradford Royal Infirmary.—H.P. and H.S. Each £150.
Brighton, Royal Sussex County Hospital.—Asst. Pathologist to Special Depts. £400. Also H.P. £150.
Brighton, Sussex Maternity and Women's Hospital.—Res. H.S. £130.
Burnley, Victoria Hospital.—H.P. At rate of £150.
Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Hon. Asst. to Out-patient Dept. Also Res. H.S. At rate of £75.
Charing Cross Hospital, W.C.—Res. M.O. £350.
Children's Hospital, Hampstead.—Res. M.O. At rate of £100.
Clapham Maternity Hospital, Jeffreys-road, S.W.—H.S. £120.
Connaught Hospital, Orford-road, E.—Res. H.S. At rate of £100. Also Hon. Visiting Dental Surgeon.
Coventry and Warwickshire Hospital.—Res. Asst. H.S. £125
Doncaster, Royal Infirmary.—Jun. H.S. At rate of £175.
Dreadnought Hospital, Greenwich.—Physician to Out-patients Also Asst. Radiologist. 50 gns.
Dukinfield Borough and Hollingworth Urban District.—M.O.H £800.
East Ham Memorial Hospital, E.—Hon. Surg., Hon. Phys. Also Hon. Radiologist.
East London Hospital for Children and Dispensary for Women Shadwell, E.—Physician. Also Asst. Physician.
Great Yarmouth General Hospital.—Jun. H.S. At rate of £140.
Harrogate Infirmary.—Sen. H.S. £150.
Hastings, Royal East Sussex Hospital.—Sen. and Jun. H.S. At rate of £150 and £100 respectively.
Hereford, Herefordshire General Hospital.—Hon. Phys.
Heston and Isleworth Urban District Council.—Obstet. Phys 3 guineas per session.
Hospital for Sick Children, Great Ormond-street, W.C.—Dental Surgeon.
Indian Red Cross Society, King George Thanksgiving (Anti Tuberculosis) Fund.—Organising Secretary. Rs.750–125 per month.
Ipswich, East Suffolk and Ipswich Hospital.—H.S. £120.
Italian Hospital, Queen-square, W.C.—Sen. H.S. At rate of £150.
Kidderminster and District General Hospital.—H.S. £150.
Lancashire County Council, High Carley Sanatorium, near Ulverston.—Temp. Asst. Tub. M.O. £450.
Liverpool, St. Paul's Eye Hospital, Old Hall-street,—H.S. At rate of £120.
Llangwyfan, near Denbigh, North Wales Sanatorium.—Third Asst. Res. M.O. £250.
London Hospital, E.—Med. First Asst. and Reg. £300.
Macclesfield General Infirmary.—Second H.S. At rate of £150
Manchester, Ancoats Hospital.—Orthopædic H.S. At rate of £100.
Manchester Hospital for Consumption and Diseases of the Throat and Chest.—Res. M.O. for In-patient Dept., Bowdon, Cheshire. £200.
Manchester and Salford Hospital for Skin Diseases.—H.S. At rate of £100.
Manchester Royal Eye Hospital.—Jun. H.S. £120.
Manchester Royal Infirmary.—Dickinson Research Travelling Scholarship in Medicine. £300.
Middlesbrough Education Committee.—Sen. Asst. School M.O. £500.
Middlesex Hospital and Medical School, W.—Registrars. Each £300.
Middlesex Hospital, W.—Obstetric and Gynæcological Surgeon
Newcastle-upon-Tyne Hospital for Sick Children.—Jun. H. Also Res. Sen. H.S. At rate of £100 and £95 respectively
Prince of Wales's General Hospital, London, N.—Hon. Asst. Surg.
Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Asst. Director of Research Lab. £750.
Queen's Hospital for Children, Hackney-road, E.—Res. M.O. £200. H.S. Also Cas. O. Each at rate of £100.
Radium Institute, Riding House-street, W.—Anæsthetist.
Royal Eye Hospital, St. George's Circus, Southwark, S.E.—H.S. and Asst. H.S. At rate of £150 and £100 respectively
Royal London Ophthalmic Hospital, City-road, E.C.—Hon. Dental Surg.
St. Bartholomew's Hospital.—Two Chief Assts. to Dental Dept. Also Dental H.S. £80.
St. Mary's Hospital, W.—Med. Registrar. £200.
Samaritan Free Hospital for Women, Marylebone-road, N.W.—H.S. At rate of £100.
Sheffield Royal Hospital.—Ophth. H.S. At rate of £80.
Southampton, Free Eye Hospital.—Hon. Asst. Ophth. Surgeon
South London Hospital for Women, South Side, S.W.—Physician to the Skin Dept.
Staffordshire Mental Hospital, Cheddleton, near Leak.—Asst. M.O. £600–£750.
Surrey County Council, Mental Hospital Committee.—Jun. Asst. M.O. £350.
Taunton and Somerset Hospital.—Jun. H.S. £100.
University College Hospital, W.C.—Second Asst. in Child Welfare Dept. £50. Also Hon. First Asst. for the Ear, Nose, and Throat Dept.
Walsall General Hospital.—Cas. H.S. At rate of £120.
Warwick, King Edward VII. Memorial Sanatorium.—Jun. Asst. M.O. At rate of £200.
Weir Hospital, Grove-road, Balham, S.W.—Sen. Res. M.O. £200.
Willesden General Hospital, N.W.—Clin. Asst. to Gynæcological Out-patients' Department. Also H.P. £100.
Willesden Urban District Council.—Asst. M.O. £600.
Wolsingham, Holywood Hall Sanatorium.—Asst. M.O. £350.
The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Southminster (Essex).

HOSPITALS AND GREYHOUND RACING.—The governors of the Miller General Hospital have returned a cheque for £20 sent from the Charlton Stadium as part of the proceeds of a charity greyhound racing meeting.

GIFT TO SALFORD ROYAL HOSPITAL.—The annual report of the hospital shows an income of £36,3[illegible], and an expenditure of £52,357, the deficit on the year's working being £16,032. The honorary treasurer, Mr. Leonard Sumner, has given £10,000 to the hospital and also an investment of £2500. Out of the 49,897 patients treated during the year, 19,427 were victims of accidents.

ADDRESSES AND ORIGINAL ARTICLES

THE VALUE OF ALKALIS IN THE TREATMENT OF CHRONIC NEPHRITIS.

By A. Arnold Osman, D.S.C., M.R.C.P. Lond.,

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THE object of this paper is to summarise the results of a method of treatment which has been used in certain types of chronic nephritis during the past seven years and to indicate, from the experience gained, in which cases and to what extent it is likely to prove of most value. The actual details of the method have been fully described elsewhere.[1]

It has been considered advisable to adopt the terminology usually employed in this country in the classification of the cases treated, rather than the more accurate and elaborate system of Volhard and Fahr. To avoid subsequent confusion it may be as well to explain concisely the actual terms used.

The cases have been divided into three main groups: (*a*) chronic parenchymatous, (*b*) chronic "mixed," and (*c*) chronic interstitial. Gross generalised œdema was the conspicuous and invariable feature of both the chronic parenchymatous and chronic "mixed" cases, the latter differing from the former in having also *at the time treatment was commenced* a considerable degree of nitrogen retention or azotæmia and often, in addition, marked cardiovascular changes. Chronic interstitial nephritis includes only cases which at the time of observation had nitrogen retention and cardiovascular changes but no œdema, though this may have been present in the earlier stages of the disease. The term chronic nephrosis has not been used, as it applies strictly to a very rare form of disease which can only be diagnosed with certainty on microscopical examination of sections of the kidneys. With this test most examples of chronic nephrosis, despite the requisite clinical and biochemical qualifications for inclusion in the group, subsequently turn out to be cases of chronic glomerular nephritis with maximal tubular changes. A few cases of acute parenchymatous or acute tubular nephritis are also included. A passing reference is also made to acute glomerular nephritis or acute nephritis with hæmaturia—terms which are self-explanatory—and subacute nephritis or cases of acute nephritis which are not clearing up satisfactorily and appear to be becoming chronic.

Alkalis may be used with advantage in many types of nephritis under certain circumstances, either for their prophylactic or their therapeutic value; the latter only will be discussed here. They should never be used except with some specific object in view. The frequent practice of giving "small" doses in the hope that they "might do some good" is bad medicine and should be condemned.

The protocols of the cases forming the basis of this paper will be published in detail elsewhere, but some of their main features have been incorporated in Table I. The cases included represent only a small proportion of those treated by this method and are, in fact, the first 40 so treated in which the history of the illness was long enough (seldom less than six months, and in one case as long as 14 years) to make spontaneous remission or improvement during treatment unlikely. With few exceptions, the symptoms were sufficiently severe to necessitate confinement to bed for at least three months before treatment was commenced. As will be seen from Table I., many of the cases had marked azotæmia and cardiovascular changes, and were therefore, of their type, severe and of long standing. Further, most of them had previously been treated by the usual methods—such as sweating, purgation, salt depletion, urea, high protein diets, thyroid extract, purine diuretics, or decapsulation—without conspicuous success. The ages of the patients ranged from 1 to 70 years, 16 being under 15 and 20 over 25 years of age. I have not included mild cases with only a short history of illness or those in which, for example, the amount of œdema was such as to permit of a little moderate exercise or walking, and in which the symptoms would in all probability have cleared up with any form of treatment or even spontaneously after a few weeks in bed. In such cases the administration of alkalis by mouth is so generally successful in hastening recovery that no detailed description is necessary.

This is well shown by the results of treating with alkalis the mild toxic tubular nephritis (or nephrosis) which so commonly accompanies, and is by some attributed to, hookworm disease, by others to malaria. The chief manifestations of this condition are gross generalised œdema, with ascites and oliguria, with considerable albuminuria and numerous casts, but no red blood cells in the urine and no azotæmia or cardiovascular changes. Treated in the usual way by diet and rest, the œdema and albuminuria as a rule subside in about 12 weeks, though residual albuminuria and relapses frequently occur. Drs. A. W. and J. N. Taves, of Rio Preto, N. Brazil, kindly undertook to try the effect of alkaline therapy in these cases, and found that the average time of recovery was reduced to six weeks, residual albuminuria and relapses being much less frequent.

The results of treatment in the present series have been judged chiefly by the effect produced on the immediate symptoms and the subsequent benefit to the patient. In chronic nephritis, where structural, progressive, and irremediable changes are so often present in the kidneys, the term "cure" cannot be applied legitimately to the disease, but it may be used for the permanent relief of a symptom such as œdema, which may in some cases—at least for a long time—constitute the chief or only disability. A good result may therefore justly be claimed on behalf of any method of treatment which relieves the sufferer of his chief symptom, prevents its recurrence, and permits a return to active life without serious inconvenience, if only for a time. The cure or relief, however, must have been effected within a period of time in which spontaneous remission or associated factors, such as confinement to bed, can reasonably be excluded as having produced the result. It must be remembered, too, that chronic nephritis is ultimately a fatal disease, except where intercurrent infection causes death, and even then it is almost certainly a contributory factor. These cases are essentially bad lives and bad material upon which to work. It follows that the remote prognosis is likely to be much the same whatever the nature of the treatment, when the latter is only symptomatic. With successful treatment, however, the capacity to lead a normal life may be recovered and maintained in place of an otherwise prolonged period of invalidism.

The mortality in the 40 cases of this series, in a period of five years, was 17, or 37 per cent., whilst in a group of the first 40 cases of as nearly the same types as could be found in the records over a similar period, treated by other methods, it was 19, or 43 per cent. The similarity in the mortality-rates of the two groups is interpreted as signifying that the cases selected for this review constitute a fair sample of severe types of chronic nephritis. It is clearly not

possible to assess with any accuracy the comparative merits of any one form of treatment in a disease such as chronic nephritis, owing to the enormous variations in type and in the stage in which the disease is presented for treatment. It is, however, possible to draw certain broad conclusions, and in doing so I hope that I have made no unjustifiable claims.

Treatment of Chronic Nephritis with Œdema.

Alkalis in small doses have long been used in cases of nephritis, generally with the rather vague intention of "flushing out" the kidneys. The use of comparatively large doses, given with the definite object of altering the reaction of the blood and tissues, came into vogue mainly as a result of the work of M. H. Fischer,[2] one of the first to appreciate the importance of physico-chemical principles as applied to the problems of everyday medicine.

The chief value of alkalis in the treatment of nephritis consists in their action in promoting diuresis and thus ridding the tissues of excess water or œdema. As might be expected, therefore, they have been found of most use in cases of chronic nephritis accompanied by considerable amounts of œdema and oliguria—i.e., in chronic parenchymatous and chronic "mixed" nephritis, where dropsy not due to an associated heart failure is the most prominent symptom. As some decrease in the plasma bicarbonate appears to be the rule in all types of chronic nephritis (84 per cent. in a recent series of 100 cases of all types[4]) it seems reasonable to suppose that alkalis, by increasing the blood bicarbonate might be of some value. It has also been found that if alkalis, in the form of equal parts of potassium citrate and sodium bicarbonate, are given by mouth, in amounts sufficient to raise the plasma bicarbonate to, and to maintain it at, a normal level under all circumstances of diet and exercise, it is often possible to induce a diuresis sufficient in degree and duration to rid the body entirely of œdema. If, after the œdema has subsided, the dose is readjusted to that which will, under the new conditions, maintain the plasma bicarbonate at a normal level, the œdema often does not return. In some cases, after an interval of freedom from œdema under this régime, it is possible gradually to diminish and ultimately to withdraw the alkalis altogether without a return of symptoms, but in others alkaline therapy should be continued indefinitely. Under the influence of alkalis albuminuria is almost always reduced—partly a dilution effect—and may disappear entirely. In view of the general belief that loss of albumin from the blood is an important factor in the production of œdema, it is interesting to note that Kempmann[3] has shown that, as the œdema associated with nephritis subsides under alkaline therapy, the protein concentration of the blood increases.

During treatment with alkalis it has usually been found that no dietetic restrictions of any kind need be imposed, and this in itself is probably of great value in a protracted case.[5] In none of the cases referred to here was any form of treatment other than alkalis employed. No doubt in the future better results may be obtained by a combination of various methods, but the object of the present investigation was to ascertain the limits of the alkaline method of treatment.

DISCUSSION OF RESULTS.

Of the 40 cases six were labelled acute parenchymatous nephritis—i.e., a tubular nephritis of comparatively short duration and unknown ætiology, with much œdema and albuminuria and no hæmaturia. The remaining cases were of the chronic parenchymatous or chronic "mixed" varieties, and all o them were suffering from marked œdema, whicl had been persistently present since the onset of th illness. Cases in which there was a history of spon taneous remission of the œdema have not bee included. It will be seen from Table I. that in 3 of the 40 cases, or 90 per cent., a sufficient diuresi was produced and maintained to cause complet disappearance of the œdema. In four cases only di the treatment fail to influence the œdema at al (Nos. 15, 20, 37, and 38). Of the 36 cases in whicl the œdema disappeared under treatment, it recurre in four (Nos. 8, 12, 18, and 40), while active treatmen was still being pursued. In these cases it was no found possible to maintain a sufficient diuresis for long enough period to control the œdema. In 3 out of the 40 cases, therefore—i.e., in 80 per cent.— it was possible to obtain complete and lasting contro over this symptom. The average period occupie by the treatment was six to eight weeks. It i at least apparent that alkalis used in sufficient dose and with proper care are among the most powe ful diuretics known in cases of chronic nephriti with œdema.

The question arises whether the œdema can b prevented from returning for indefinite periods whil the patient is leading a normal life on a normal die The following examples show that this can often b done. The correct dose of alkalis is apparently tha which will maintain the plasma bicarbonate at normal level under the conditions in which the patien is living. From time to time reassessment of th dose may be called for, according to any alteration in the habits or circumstances, in much the same wa and generally for the same reasons as readjustmen of dosage is required in diabetics under insulin— namely, with alteration in the diet or amount o exercise taken and during acute infections. Fo example, Case 1 continued to take alkali grs. 40 a day for five years without return of either œdem or albuminuria, and has continued her occupatio as a school teacher during this period. Case 2 continued to take alkali grs. 300 a day for four years Case 24 took grs. 600 a day for three years; Case 3 took grs. 600 a day for four years; Case 32 too grs. 600 a day for four years; Case 33 took grs. 70 a day for four years; and Case 36 took grs. 200 day for 18 months. All these patients were abl to return to work or to school for the periods men tioned, and any attempt at reducing the dose wa invariably followed by a return of the œdema From time to time such attempts were made, an experience showed that a reappearance of o increase in the albuminuria always heralded a retur of the œdema.

This is well illustrated by Case 24. This child has mother who is incapable of supervising treatment at hom On a daily dose of grs. 600 of alkali there was never an œdema, but during a period of four years she has relapse six times, and has had to be readmitted to hospital eac time with gross œdema and ascites. Each relapse w entirely due to slackness in taking the medicine. With th assistance of health visitors and the school authoritie however, it has been possible to prevent a return of sympton during the past 18 months, and the child has been leading normal life at home and at school, having all the time full diet. When last seen (July, 1930) there was still n œdema, and the plasma bicarbonate was normal. The are other cases, such as Case 1, where it was found possib after a period of five years gradually to reduce and ult mately to omit the alkali without reappearance of symptom In some cases of chronic "mixed" nephritis, when th azotæmia had progressed to a considerable degree, th omission of the alkali was not followed by a return of th œdema as it had been previously. This was so in Cases 2 and 33.

TABLE I.

No.	Sex.	Age.	Type.	Probable duration.	Chief symptom.	Blood-urea mg. per cent.	Max. diuresis oz. p.d.	Total loss wt. lb.	Effect on œdema.	Remarks.
1	F.	19	C.P.	15 mos.	Anasarca and ascites.	37	..	..	Cleared up.	No œdema or albumin; back at work 6 yrs.; no alkalis 2 yrs.
2	M.	3	„	1 yr.	Anasarca and ascites; anuria 3 days.	—	70	10½	„	No œdema or albumin; no further treatment; well 1 yr. later.
3	M.	2	„	1 yr.	Anasarca and ascites.	—	..	3¾	„	No œdema or albumin, but died from ward epidemic of summer diarrhœa.
4	M.	26	C.M.	? 4 yrs.	Anasarca and ascites; b.p., 196; retinitis and amaurosis.	84	96	32	No œdema; alb. decreased 11 to 1·5 pts.	No œdema; up on full diet; died of convulsions; p.m., cerebral hæmorrhages.
5	M.	41	„	? 10 mos.	Swelling of face and legs.	82	..	6½	No œdema.	Albumin diminished from solid to 1·5 pts.; œdema returned; purpura; died.
6	M.	53	„	2 yrs.	Œdema legs, thighs and scrotum.	90	..*	..*	„	Died suddenly; coronary sclerosis.
7	F.	46	C.P.	? 6 mos.	Œdema face and legs.	42	..	9½	„	Not traced.
8	F.	24	„	? 6 yrs.	General anasarca.	31	..	14	Slight trace œdema.	Readmitted 9 mos. later in convulsions and coma; blood-urea, 80; died suddenly.
9	F.	19	C.M.	14 yrs.	Anasarca and ascites.	120	78	..	No œdema; alb., trace.	"Cold" in head; ? pneumonia; œdema returned; died.
10	F.	22	A.P.	? 3 mos.	Œdema face, legs, and thighs.	..	..	..	No œdema or alb.	Not traced.
11	F.	53	C.P.	1½ yrs.	Œdema face and legs; no ascites.	31	..	..	No œdema; alb., trace.	Discharged herself.
12	M.	23	„	1½ yrs.	Anasarca and ascites.	26	130	48½	Diminished, but still present.	Œdema controlled for a time, but later returned; died; no p.m.
13	M.	3	A.P.	1 mo.	Extreme anasarca and ascites.	..	..	..	No œdema or alb.	Died of pneumococcal peritonitis; p.m.: kidneys on section normal.
14	M.	41	C.M.	9 yrs.	Anasarca, ascites; b.p. 280/150.	33	190	56	„	Died from erysipelas; no p.m.
15	M.	20	C.P.	3 mos.	Extreme anasarca and ascites.	40	circa 90	Nil.	No result.	Died; ? pneumonia; no p.m.
16	M.	20	A.P.	2–3 mos.	Anasarca and ascites.	41	85	..	No œdema or alb.	Well 1 yr. later.
17	F.	28	C.P.	—	Anasarca, ascites, retinitis; b.p., 175.	..	100	..	Considerably reduced.	Coma; tetany; death; no p.m.
18	F.	4½	„	? 6 mos.	Anasarca and ascites.	67	61	18	Œdema cleared.	Œdema cleared up but returned and then not controlled; died; no p.m.
19	M.	2½	A.P.	? 3 mos.	Anasarca, anuria; no ascites.	..	74	..	No œdema or alb.	Treatment omitted; readmitted 1 month later; anasarca, ascites, anuria; died.
20	F.	4	C.P.	3 mos.	Anasarca, ascites; traces of blood in urine.	12	..	..	No result.	Died.
21	F.	56	C.M.	1 yr.	Œdema legs and thighs; retinitis; b.p., 140.	29	..	28	No œdema; some alb.	Blood-urea increased to 61 mg. per cent.; no œdema 3 yrs. later.
22	F.	36	„	5 yrs.	Anasarca; no ascites; retinitis; b.p., 170.	31	90	17	No œdema; alb., traces.	Readmitted 18 mos. later in coma; no œdema; b.p., 210/150; blood-urea, 102; died.
23	M.	17	„	1 yr.	Anasarca and ascites; b.p., 130.	120	134	21	Cleared up.	Alb. diminished to 2 pts.; well 8 mos. later; since untraced.
24	F.	5	C.P.	2 yrs.	Anasarca and ascites.	32	75	3½	„	Relapsed 6 times in 4 yrs.; each time cleared up with treatment.
25	F.	38	C.M.	4 yrs.	Œdema face and legs; b.p., 165/95.	50	..	3¾	„	Not traced.
26	M.	31	A.P.	2–3 mos.	Œdema legs, thighs, scrotum; ? asthma.	..	80	..	„	„ „
27	M.	42	C.P.	4 yrs.	Anasarca, ascites; b.p., 140.	..	124	18	„	—
28	M.	43	C.M.	? 6 mos.	Œdema legs and scrotum.	..	90	..	No œdema; alb., ½ pt.	—
29	F.	9	C.P.	11 mos.	Anasarca and ascites.	..	..	..	Cleared up; alb., ½ pt.	Died of pneumococcal peritonitis.
30	M.	6	„	6 mos.	Extreme anasarca and ascites.	44	44	11½	Cleared up.	No further treatment; well 5 yrs. later.
31	M.	13½	C.M.	10 yrs.	Œdema of face, legs, thighs; slight ascites.	39	87	6	Cleared up; alb., ½ pt.	No œdema for 4 yrs.; blood-urea increasing.
32	M.	7	C.P.	8 mos.	Anasarca and ascites.	29	60	..	„	Remained free from œdema 4 yrs. under treatment; died pneumococcal peritonitis.
33	M.	20	C.M.	6 mos.	Œdema face, legs, thighs; no ascites.	35	..	16	Cleared up; alb., ¼ pt.	Remained free from œdema 4 yrs. under treatment; blood-urea increasing.
34	M.	28	„	10 mos.	Anasarca and ascites.	60	100	23½	Cleared up.	Readmitted 1 yr. later with uræmia; died.
35	F.	63	„	1 yr.	Anasarca; slight ascites.	80	150	..	„	Return of œdema; coma; death; no p.m.
36	M.	70	„	7 yrs.	Anasarca and extreme ascites.	80	160	56	Cleared up; tr. of alb.	Still free from œdema under treatment 1 yr. later; at home; full diet.
37	M.	28	„	2 yrs.	Anasarca and slight ascites 1 yr.	67	90	..	No result.	—
38	M.	5½	A.P.	? weeks.	Anasarca and ascites.	..	..	..	„	Tetany; dead.
39	F.	4	C.P.	1 yr.	Anasarca.	..	60	9	Cleared up.	—
40	M.	7	„	1 yr.	Anasarca and ascites.	..	..	..	„	Œdema twice returned and twice cleared up with treatment.

* Records missing.

A.C. = acute parenchymatous; C.P. = chronic parenchymatous; C.M. = chronic mixed nephritis.

The Dangers of Alkali Therapy.

It is not to be supposed that large doses of alkali can be given with impunity where the kidneys are badly damaged and, therefore, unable to excrete any excess. On the contrary, even under the most favourable conditions—as in hospital, where constant skilled supervision can be obtained and the means are at hand for immediate blood analyses—the danger of overdosage is always present and it may be precipitated by such accidents as intercurrent infection or vomiting from any cause. Treatment by this method, however, without the control of blood estimations, may give good results where other methods have failed, as shown by Ungley, Suzman, and Feggetter,[6] but all their cases were in hospital and were most carefully and constantly watched. Details of the particular dangers likely to be encountered and the means adopted in overcoming them have already been described.[1] Of these, tetany is the most important. Recent observations suggest that in the past undue caution has been exercised in the dosage of calcium used in counteracting this danger, and it is probable that, with a bolder use of calcium, tetany will cease to be a serious menace. No evidence has been obtained that the continued use of alkaline salts cause any damage to the renal cells, as suggested by Stieglitz.[7]

TABLE II.—*Deaths in Cases of Nephritis Whilst Under Treatment.*

Case No.	Type.	Probable cause of death.	Confirmed p.m.	Œdema at time of death.
4	C.M.	Cerebral hæmorrhage.	Yes.	Nil.
5	„	Uræmia. (Died at home.)	No.	+*
6	„	Coronary sclerosis.	Yes.	Nil.
8	C.P.	Uræmic convulsions. Sudden death.	„	+*
9	C.M.	Uræmic coma; pneumonia.	„	+*
12	C.P.	? Heart failure; ? pneumonia.	No.	+
15	„	? Pneumonia.	„	+
17	„	Tetany; coma.	„	+
18	„	? Cardiac failure.	„	+
19	A.P.	Anuria; vomiting; ? uræmia.	„	+
20	C.P.	? Relative suppression; ? heart failure.	„	+
22	C.M.	Uræmic coma and convulsions.	Yes.	+*
29	C.P.	Pneumococcal peritonitis.	„	+*
32	„	„ „	„	Nil.
34	C.M.	Uræmic coma.	No.	+
35	„	„ „	„	+
38	A.P.	Tetany; coma.	Yes.	+

* Terminal.

The causes of death in the present series are shown in Table II. A fatal result in many of the cases shown in Table I. was inevitable with any form of treatment. Case 17 was not seen by me; she was treated in another hospital without the control of blood examinations and the notes were forwarded later. It must be admitted that overdosage with alkalis was the immediate cause of death in Cases 17 and 38, and that it was a possible cause in Case 15. No other deaths from tetany due to over-alkalinisation have occurred in my experience.

Indications and Contra-indications.

Chronic nephritis with œdema.—Alkaline therapy is chiefly of value in the treatment of chronic nephritis for the production of diuresis and the dispersal of œdema. It must not be inferred, however, that the removal of œdema is either necessary or desirable in every case or at all stages of the disease in which it may occur. There are reasons for believing that in some cases and at certain times œdema subserves a protective function, possibly by the dilution of toxic or retained substances. In the absence of precise knowledge one can only be guided by clinical experience and a careful consideration of all the facts paying special attention to the age and general condition of the patient and to the state of the cardiovascular system. It is obviously courting disaster to submit an elderly subject with irregular cardiac action to the strain involved in the removal of large quantities of œdema fluid, even when there are grounds for believing that the œdema is not cardiac in origin. Marked cardiac arrhythmia is probably a contra-indication to the use of large doses of alkalis in any type of case. A list is given below of what are considered to be the chief indications and contra-indications for the use of alkalis in the active treatment of the various types of nephritis. There is little doubt that with adequate facilities for the investigation of a sufficient number of cases of all types fairly simple means could be devised for determining beforehand the probable value of this form of treatment for a given case.

Chronic nephritis without œdema.—In this type of disease the plasma bicarbonate is, as a rule, lower than in the cases with œdema, even at a time when nitrogen and phosphate retention are not extreme. Although polyuria is also the rule in such cases, and the diuretic action of alkalis is therefore not called for, it is possible that alkalis in amounts sufficient to raise the plasma bicarbonate to normal are not without benefit. The evidence for this is admittedly weak, and may be mentioned briefly for what it is worth. Vague clinical impressions, both of a subjective and of an objective nature, are clearly inadmissible as evidence, and accurately controlled observations are much needed.

Weiss[8] has shown that alkalis are the most effective drugs in the treatment of the nephritis of bichloride of mercury poisoning, where œdema is not usually a prominent symptom. I have pointed out[5] the benefit of alkalis in permitting the use of a more liberal diet. The following experiment also suggests that alkali therapy may not be without value in some cases of chronic interstitial nephritis.

In August, 1928, it was decided to observe the effect of omitting alkalis altogether in four cases where they had been given continuously for the preceding four years, in doses of from grs. 240 to 700 a day—i.e., doses which had been found to be sufficient to keep the plasma bicarbonate at a normal level while the patients were pursuing their usual avocations on a normal diet. The cases were Nos. 31, 32 and 33 in Table I., and a married woman, aged 56. They were all treated in the first instance for œdema, which has not recurred throughout the period of observation. In the course of time, however, the azotæmia had considerably increased in all the cases, so that by August, 1928, the blood-ureas were 210, 50, 220, and 80 mg. per 100 c.cm. respectively. None of the patients had up to this time shown any of the usual symptoms of grave uræmia—i.e., headache, amaurosis, or convulsions—though Cases 31 and 33 were extremely anæmic. By December, 1928, all four cases had been admitted to hospital with urgent symptoms; Cases 31 and 33 in convulsions, Case 32 with gross œdema and ascites (pneumococcal peritonitis, from which he died), and the married woman with dyspnœa and œdema of the legs. It is possible, of course, that the results of this experiment were nothing more than a coincidence, though it is difficult to avoid the impression that the cases failed owing to the withdrawal of a support they had previously enjoyed.

It is of great importance to obtain further definite evidence upon this point, for if these observations should be confirmed it would be necessary to advocate the continuous use of adequate doses of alkalis in all cases of chronic nephritis, whether the patients are actually suffering from œdema or not. At present the evidence scarcely justifies such a course, though I am inclined to give the patient the benefit of the doubt where there are no obvious contra-indications and the plasma bicarbonate is below normal.

Summary.

In attempting to assess the advantages and disadvantages of this method of treatment compared with the others cited above, it is probably true to say that it is more effective in removing and preventing the recurrence of œdema in a larger proportion of cases. On the other hand, the necessity of giving comparatively large doses is attended by certain dangers and the need for the most constant supervision and occasional blood analyses. It is not, therefore, a suitable method for adoption where such facilities are not available, but it is frequently successful where other methods have failed. The more usual methods are all comparatively safe (except decapsulation) and can mostly be carried out without elaborate precautions or even much experience, but they are frequently ineffective. In cases with persistent œdema, alkaline therapy should not be attempted until other and simpler measures have failed and spontaneous recovery appears unlikely. It is a method of treatment which calls for considerable experience in management and a nice discrimination in the selection of cases.

Alkalis should only be used, except in rare instances,[1] where a preliminary estimation has shown a decrease in the plasma bicarbonate. They may often be used with advantage for the production of diuresis and the control of œdema in (*a*) chronic parenchymatous nephritis, (*b*) chronic "mixed" nephritis, (*c*) the late stages of acute parenchymatous nephritis, (*d*) the later stages of subacute nephritis with persistent œdema and without marked hæmaturia.

Alkalis should not be used, except in rare instances,[1] in the early stages of acute nephritis with hæmaturia —i.e., in (*a*) acute nephritis (acute hæmorrhagic or acute diffuse nephritis)*; (*b*) during acute exacerbations (with hæmaturia) of chronic nephritis, unless controlled by estimations of the blood bicarbonate; (*c*) in the presence of marked myocardial degeneration and cardiac arrhythmia; (*d*) without a preliminary estimation of the blood bicarbonate when there is persistent vomiting or marked dyspnœa.

I should like to take this opportunity of thanking the many friends and colleagues who have assisted me from time to time in carrying out these investigations, and also those who have allowed me to treat cases under their care, particularly Drs. A. F. Hurst, A. P. Beddard, H. French, J. A. Ryle, Moffatt, C. C. Ungley, M. M. Suzman, J. J. Conybeare, C. Hampson, A. W. Taves, H. C. Cameron, and E. P. Poulton. I am greatly indebted to Dr. H. G. Close for performing many of the necessary biochemical investigations, and for help in many other ways. I am also indebted to Dr. J. H. Ryffel, the late Prof. Adrian Stokes, and Prof. Donaldson, of Guy's, and Dr. Arthur Davies, of Queen Mary's, for kindly placing at my disposal the necessary laboratory facilities, and to the authorities at Guy's Hospital for providing me with a special out-patient clinic for the supervision and following up of these cases. Finally, my thanks are due to the Medical Research Council for the aid of a grant enabling me to carry out this work.

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*Alkali administration, as a matter of fact, will often hasten recovery in acute nephritis with hæmaturia, but as the majority of these cases clear up satisfactorily without special treatment it is considered unwise to advocate the routine use of this method (although the dangers of doing so are largely hypothetical) until more precise indications for their use in such cases have been worked out.

BURNS AND SCALDS.

AN ANALYSIS OF THE CHANGING INCIDENCE AND MORTALITY.

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Hospital registers throw no little light upon the order of social as well as of medical progress. Upon their pages certain morbid conditions dwindle fast in number from year to year. Chlorosis, lead-poisoning, rickets, and certain fevers have come to be regarded as "disappearing diseases." If burns and scalds have hardly earned the title of "disappearing accidents" there has nevertheless been a great reduction in their number and severity during the present century. Although such a change for the better will be readily acknowledged by most surgeons whose experience has compassed a score or more years, no attempt has been made to assess the changing incidence and mortality. Since such an estimate has an important bearing upon the appraisement of new therapeutic claims, I have thought it desirable to make one and at the same time to try to apportion the credit as far as possible. The results have been striking.

Large figures are obviously essential. Those of the London Hospital for the 30 years 1899–1928 have been taken and, to avoid minor fluctuations and give better perspective, have been collected under six consecutive five-yearly periods. Altogether 3809 cases of burns and scalds were deemed severe enough to require in-patient treatment during the 30 years, and these cases only come under review. Statistics vary with the area served by an institution, but the London Hospital, situated in an average mixed industrial and residential neighbourhood, may well be regarded as typical for the purpose. Treatment has varied with general therapeutic progress and with the ideas and inclinations of the various surgeons, with whose kind consent the figures are given.

The first table shows for each five-year period the number of cases, the number of deaths, and the percentage mortality for all ages.

Table I.—*Burns and Scalds; all Ages.*

Period.	Admissions.	Deaths.	Mortality per cent.
1899–1903	990	251	25·3
1904–1908	901	234	25·9
1909–1913	729	101	13·8
1914–1918	551	61	11·7
1919–1923	352	31	8·8
1924–1928	286	19	6·6

The first two periods, save for an incidence fall of 89, are very similar. From then on, however, the changes are arresting. During 20 years the admissions have fallen to less than one-third, deaths to less than one-twelfth, and the mortality-rate to approximately one-quarter. In each item the fall has been progressive.

Effect of Social Changes and Legislation.

The lessened incidence must be due to factors in the home and in the workshop. It is possible that other hospitals may have diverted some cases, but such an influence can only be very small. On the other hand, there have been many social changes to account for the decline. Oil-lamps and other naked lights are rapidly becoming extinct; the electric bulb is replacing the gas-bracket; flannelette as a clothing material is no longer in favour; overcrowding is

being relieved by better housing conditions; smaller families allow of greater care; factory regulations have been tightened up, and a Children's Act was passed in 1908. This Act, sometimes called the Children's Charter, made it a punishable offence to leave a child of under 7 years of age in a room with an unprotected fire, and also threatened penalties to the guardian of a child for neglect or exposure to injury in any way. Although not so familiar to the better classes, the Act is well known amongst the poor and, if prosecution is rarely instituted, it is because the authorities regard a tragic event as in itself sufficient punishment to the parents.

The falling incidence does not, however, explain the diminishing mortality percentage. The latter may be attributed to improved treatment or to lessened severity of the lesions, or to both. The greatest and most abrupt fall in mortality took place in the 1909–1913 period, when the percentage was approximately halved. The methods of treatment will be referred to later; it is sufficient now to state that there was no sudden or radical therapeutic change about that time. Yet a more gradual effect would be expected if the fall were due to a paucity of serious cases resulting upon the various social changes enumerated above. There is one exception, the Children's Act, which came into force in 1909. Was the Act the main cause of the transformation? Its benefits have been minimised in some quarters, although reference to the Registrar-General's reports should disabuse anyone of doubt. These reports show, since the passing of the Act, a decisive fall in the death-rate from burns and scalds at each age-period of childhood. The fall has been gradually progressive, with the single interruption of a temporary rise during the war years.

The Registrar-General's figures, however, deal only with deaths in proportion to population and not with the mortality-rate in hospital patients. To estimate any effect of the Act on the latter, I have separated various age-groups in the second table.

TABLE II.—*Cases and Mortality-rate at Various Age-periods.*

Period.	Over 12 years.		Under 12 years.		Under 6 years.	
	Cases.	Mortality per cent.	Cases.	Mortality per cent.	Cases.	Mortality per cent.
1899–1903	259	22·0	731	26·5	630	26·2
1904–1908	191	23·0	710	26·6	610	26·7
1909–1913	157	17·2	572	12·9	494	12·7
1914–1918	136	13·2	415	10·3	345	10·7
1919–1923	98	9·1	254	8·7	208	10·1
1924–1928	88	11·3	198	4·5	174	5·2

The second table shows that the mortality-rate has decreased more in children than in adults and that the most abrupt change occurred after 1908. Since the mortality-rate fell in much greater degree than the incidence, and since there were no sudden fundamental changes in treatment, the number of very grave injuries must have altered abruptly. It seems only fair to attribute some part of the amelioration to the influence of the Act, which had revealed to parents the appalling dangers of these accidents. Why the incidence should not have declined pari passu with the mortality is not easy to explain. Possibly a lack of serious cases allowed more beds free to accommodate those which previously would have had to have out-patient treatment. The decrease in severity is noticeable in a general survey of the cases; how the Act may have been responsible can be shown in another statistical fashion. It is easier to prevent a child from being burned than from being scalded; the kettle and the teapot are not so easily circumvented as the fire. If the Act is to receive credit, a change in the proportion of burns to scalds should be expected and this is found in the third table, restricted for obvious reasons to younger children.

TABLE III.—*Percentage Proportions of Burns and Scalds in Children Under Six Years of Age.*

Period.	Burns.	Scalds.	Period.	Burns.	Scalds.
1899–1903	41·2	58·8	1914–1918	39·1	60·9
1904–1908	40·7	59·3	1919–1923	30·0	70·0
1909–1913	31·4	68·6	1924–1928	30·8	69·2

Thus the ratio of burns to scalds has diminished. The set-back in the war years only emphasises the importance of parental care. The main alteration in the proportion again occurred after 1908, and must be regarded as further proof of a beneficent piece of legislation.

There is, however, another important factor to be considered in children. The prognosis of burns and scalds is usually based on the extent of the lesion, and in a general way this proves to be correct. But it is correct only in a general way, and there are many exceptions to any rule which specifies the approximate extent required to produce death. Therefore the varying resistance of the child must play a part. Post-mortem reports in children dead from burns and scalds at the end of last and the beginning of this century abound with the additional findings of rickets, tuberculosis, and marasmic conditions. Although bodily resistance may not be an easily measurable quantity, the comparative rareness of notice of these extra handicaps in the autopsy records of more recent years cannot but indicate that the children of this generation have a greater chance of survival from these accidents than had their predecessors of a quarter of a century and more ago.

Effect of Treatment.

What part have altering methods of treatment played in the reduction of the mortality-rate? Fraser,[1] writing in 1926 on the subject of burns in children, said: "It is a sphere of surgical work which appears to have made comparatively little progress, at least in so far as the reduction of mortality is concerned." That may be correct. At the same time he referred to a recent investigation into a series of 300 hospital cases in children under 10 years of age in which the mortality-rate was 38·7 per cent. This is profoundly different from the London Hospital figure of approximately 6 per cent., and the implication can only be that he considered social influences as backward as surgical treatment. Such an astounding mortality must surely be due to some peculiar local condition in Edinburgh, and it is to be regretted that the exact years of the investigation were not given. Bancroft and Rogers,[2] of New York, in the same year gave the mortality in a series of 104 hospital cases of all ages as 28 per cent. When one considers the difficulty in predicting which burn may produce a fatal result—for extent is only one factor—the one can only conclude from these mortality figures that hospital accommodation in certain cities must be taxed to an almost incredible extent.

From time to time writers have advanced figures to claim for some treatment a superiority over others. They have, however, failed to take into account the changing social outlook, and too often they have based their contentions on small series of cases. A large series and a simple analysis seem to me the most helpful element of such an investigation, since

nature of the injuring agent, the degree and extent of the lesion, and the age and physical condition of the sufferer may all vary within wide limits. The greater the series the truer the picture.

Variations in treatment mainly concern the form of the local application and the methods designed to prevent or neutralise the toxæmia which produces the so-called secondary shock. There is but little difference in the methods of combating initial shock by rest, warmth, and sedatives. In recent years the importance of secondary shock has been made to overshadow that of initial shock, I think, to an unjustifiable extent. Ogilvie [3] and Wilson [4] both assert that only a small percentage of patients die of primary shock. Wilson declares that before the advent of tannic acid treatment initial shock was responsible for only 2·5 per cent. of deaths. If one regards those who died on the first, second, or third day without any reactionary rise of temperature as having died of initial shock, then 234 out of my series of 697 deaths can be attributed to it, giving a percentage of 33·6. (Only 22 of the 234 died on the second or third day, a fact which enhances the value of the figures. None was treated with tannic acid.) This percentage can hardly be termed small. The importance of the observation lies in the fact that it is often advised, to counter subsequent dangers, that the patient should be submitted very early to cleansing and local application procedures, and for these an anæsthetic is often necessary. Worthy of merit as this technique may be, it is obvious that with such a large proportion of deaths from initial shock, the wisdom of giving any treatment other than general in the very early stages must be carefully considered in each case. I do not wish to minimise the importance of cleansing the skin and removing dead epithelium before local applications are made. Bacteria find wonderful scope for activity in burned tissues, and the advent of antisepsis and asepsis must have played a great part in the reduction of the later mortality.

LOCAL APPLICATIONS.

The usual choice is between an antiseptic protective dressing, which can be changed easily with little distress to the patient, and one or other of the various solutions which are intended to "fix" the toxins produced by the action of heat upon the tissues. All forms have been employed in the series analysed. Carbolic compresses, numerous antiseptic ointments, picric acid solutions, waxes, and tannic acid have all been in use at one time or another. No preference is to be observed throughout the series for any particular treatment based upon the extent of the injury. In a majority of cases one or other of the various "burn ointments" has been the choice. These are compounded usually of several of the following ingredients—zinc oxide, boric acid, eucalyptus, soft paraffin, wool fat, and castor oil. Tannic acid treatment did not come into vogue until 1926, and only 12 cases so treated are included in the series.

The general tendency in local treatment at the present time is towards "fixation" methods. This inclination has been induced by a growing realisation of the dangers of toxæmia and by the strong advocacy in certain quarters of tannic acid solutions which, theoretically at least, imprison the toxins within a scab. There can be little doubt, from both clinical and experimental evidence, of the existence of such a toxin, although its chemical composition is as yet unknown. While Davidson,[5] who introduced the tannic acid treatment, made no claim for reduced mortality in a large series, he thought that in 15 cases of severe burns so treated the mortality was less than would have been expected with other forms of treatment. Wilson, however, in a report issued by the Medical Research Council, stated that in a series of 105 cases of children treated by tannic acid the mortality was 10·5 per cent. and, contrasting this with Fraser's figure of 38·7 per cent., quoted above, claimed the difference as due to the new treatment. The cases were consecutive hospital admissions, and it was admitted as possible that a larger number of less extensive burns than usual may have been admitted to receive the benefit of tannic acid applications. In the absence of a date for Fraser's series, the claim cannot be properly assessed, since the London Hospital series shows a progressive fall of 26 to 5 per cent. over 25 years without, for all practical purposes, the aid of tannic acid.

TANNIC ACID.

Bancroft and Rogers [2] compared series of burns of approximately similar extent treated by débridement picric acid and dry air, and tannic acid, and gave the mortality-rates as respectively 57, 40, and 22 per cent. But the numbers so treated were ridiculously small. Seven cases only were treated by débridement and nine with tannic acid; it is not clear how many received picric acid and dry air therapy. In a later series of 114 cases treated with tannic acid, they give the mortality as approximately 20 per cent., but give no indication of the severity of the lesions.

A second and apparently very convincing claim made by Wilson [4] is that tannic acid solutions have so countered toxæmia that the proportion of deaths from initial shock has risen from 2·5 to 30·77 per cent. But this latter figure corresponds closely to my estimate, given above and based on 697 fatal issues, of a 33·6 percentage of deaths from initial shock without tannic acid treatment. It is difficult, laying aside statistics and recalling one's experience, to believe that only 1 in 40 deaths is due to primary shock.

Tannic acid treatment may or may not be the great advance claimed by these writers, but their statistics are useless in its advocacy. My personal view, based admittedly on a moderate number of cases, is that it is no better than any other local application in combating toxæmia. Its advantages seem to me to be more in the production of a scab which obviates painful dressings, and under which the reparative processes proceed smoothly. But that is only if sepsis does not supervene. Advocacy of immediate tannic acid applications where the burned area cannot be thoroughly cleansed beforehand seems to me not only futile but dangerous. Tannic acid certainly has its place in treatment, but there must be judicious care in the selection of cases.

SHOCK.

Assuming, then, that there is no great difference in merit between the modern forms of local applications, can any credit at all for reduced mortality be given to improved treatment? The simplest way to determine this, I think, is to investigate any changing proportion of deaths from initial shock. Such deaths are easily definable compared to those occurring later, when very often there may be a combination of toxæmia (which may manifest itself in many ways), sepsis, and exhaustion. If there has been any advance in local treatment, the lessened number of deaths from later causes will have produced a relative increase in the proportion of deaths from primary shock, in which treatment has probably altered but little. The figures become very small and discount the analysis, but perhaps they may be confirmed by others.

If any inference can be made from Table IV., it is that there has been a progressive relative increase in deaths from initial shock, suggesting an improvement in treatment directed towards the secondary dangers. I would attribute this to a greater appreciation of the need for cleansing the burned area and removing loose dead tissue at the earliest practicable time, to advances in antisepsis, and to a realisation of the necessity of the administration of fluids in the presence of toxæmia.

TABLE IV.—*Deaths due to Initial Shock; all Ages.*

Period.	Total deaths.	Deaths from initial shock.	
		Number.	Per cent.
1899–1903	251	76	30·2
1904–1908	234	68	29·0
1909–1913	101	41	40·6
1914–1918	61	24	39·3
1919–1923	31	14	45·1
1924–1928	19	11	57·9

From personal experience and in the light of the figures I have quoted, I am much more inclined to put faith in the neutralisation of the toxæmia by the introduction of fluids into the circulation than in its prevention by any local application at present known. Davidson [5] has shown that the most important circulatory changes in burns are a rise in the non-protein nitrogen and a marked depletion of the blood chlorides, a state similar to that in acute intestinal obstruction. Bancroft [6] therefore recommends the daily administration by hypodermoclysis of as much as 2000 or 3000 c.cm. of normal saline, or of smaller quantities of hypertonic saline when the toxæmia is more severe. Fraser,[7] who also emphasises the importance of fluid intake, points out, in addition, the serious call made upon the alkali reserve of the body by deranged metabolism consequent on the toxæmia, and for this advocates the administration of alkalis, in particular alkaline sodium phosphate. The addition of glucose is recommended for children by all. From these neutralising methods I have seen many happy results in established toxæmia. Used prophylactically, they have probably saved many lives.

Conclusion.

Social changes, legislation, and improved treatment have all contributed to a transformation. The impression left by the analysis is that the first two have outdone the third. Mortality has now fallen to such a figure that any further reduction is most likely to follow on some revolutionary change in treatment. These seems to be little difference in merit between the various local applications in use, and possibly too much attention is focused on the actual lesion. It would be well, to change a familiar slogan slightly, to be able to "fix and forget," but that time is not yet. Neutralisation of the toxins and their effects is at present a more satisfactory procedure than their fixation.

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PARALYSIS OF CAPILLARY BLOOD-VESSELS OF THE HAND

FOLLOWING WOUNDS OF THE FOREARM.*

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WHILE serving at a hospital in France during the war I was able to note certain immediate nervous disturbances in the hand following gunshot wounds in which the projectile had perforated or passed close to the central compartment of the forearm. Several opportunities occurred afterwards for me to observe the later consequences of these injuries. The cases about to be discussed are in two groups. In the first are those of men who were seen within a day or two of being wounded and were then lost to sight. Of these only the briefest notes were made. Soldiers with this type of wound were usually evacuated to England without delay. Other circumstances, too, were unfavourable to the careful and deliberate investigation of minor wounds. The second group of cases includes men who, having suffered from the same kind of injury as those in the first group, were not seen by me until a considerable time had passed since the infliction of the initial lesion.

Group 1. (Cases 1 to 11.)—For a short while after a bullet or fragment of shell has perforated the forearm so as to traverse the interosseous space or to pass in the near neighbourhood of the anterior interosseous artery, there is a more or less complete glove anæsthesia together with loss of power in the hand. Within the next few days the anæsthesia disappears, recovery taking place, as a rule, in even zones from above downwards, just as occurs in anæsthesias of mental origin, although it happens occasionally that complete sensibility is restored to the ulnar side of the hand sooner than to the radial side, or vice versa. The muscular paralysis, which at the first may have amounted only to a pronounced weakness, also gradually improves in the next few days after the wounding. I must admit that sensation was tested in most cases merely by light prick of a common pin, and muscular power by telling the patient to abduct and adduct the thumb and fingers and to straighten the fingers. But, crude as these were, it soon became evident that these tests were of practical value. I was looking at that time for cases of arterial injury with ischæmia, and these tests were sufficient to pick out such cases quickly from amongst a large number of wounded.

Arterial ischæmia in the upper limb is accompanied in the early stages by (*a*) a glove anæsthesia of the hand which is absolute for all forms of sensation, (*b*) a complete paralysis of the small muscles of the hand, (*c*) increased surface temperature of the affected limb, (*d*) a hardening of the affected muscles. It became apparent almost at once that two kinds of case were being collected by the preliminary tests—namely, (1) cases of genuine ischæmia due to wound of the main arterial trunk, and (2) other cases in which the main artery had not been obstructed but in which the projectile in passing through the arm had passed close to the main artery or, in wounds below the elbow, had traversed the central compartment of the forearm.

From anatomical considerations alone it is obvious

* The term "capillary" throughout this paper denotes every blood-vessel which has no muscular coat.

that a bullet which passes through or close to the sheath of the brachial artery is apt to cause contusion, and perhaps closure, of the artery, in addition to lesions of the nerve trunks. Consequently, and to avoid disputable material, this paper has been confined to wounds of the forearm where ischæmia need not be considered and where the nerve trunks are not in close anatomical relationship. I may remark, to avoid misunderstanding, that wounds of the arm above the elbow are sometimes followed by symptoms like those of the cases now under discussion, which I shall attribute to paralysis of the small blood-vessels of the hand. The difficulty in basing an argument upon these wounds above the elbow is that the particular phenomena to which I wish to draw attention may be confused with, and perhaps overshadowed by, symptoms due to a concurrent injury to the main artery or to the large nerve trunks. It is true that even in the forearm we meet with coincident injuries which complicate the clinical picture as, for example, when a median nerve paralysis coexists with a paralysis of the capillary blood-vessels of the entire hand. Nevertheless, in this region pure cases, untainted with arterial ischæmia or with ulnar or median paralysis, are sufficiently common to form the material basis of a useful study. Even when there is evidence of a partial lesion of the ulnar or median nerve, as in some of the examples given below, this lesion can hardly be made responsible for the extensive paralysis of the small blood-vessels, in view of the similar paralysis which occurs without any injury of these nerves.

Group 2. (Cases 12 to 22.)—More striking than the immediate symptoms of these wounds which pass through the central tract of the forearm are the permanent consequences. The chief of these are persistent coldness of the hand and impaired capacity for manipulation. The coldness is pronounced. The patient will say that he has taken to wearing two gloves but still cannot keep his hand warm. Moreover, though cold, the hand in some cases may be seen to be engorged with blood and varying in hue from almost normal to dusky red or bluish-purple according to the circumstances. Usually, too, there is a distinct diminution of sensibility which can be detected by the use of light pricks.

The efficiency of the hand as a motor organ in these cases is lessened in two ways. In the first place the movements of the fingers and thumb become awkward, and fine work with them is no longer possible. When asked to button up his coat or waistcoat with the defective hand the patient will set to work in a clumsy way, and perhaps fail in the end, exactly like a healthy man whose hand is numb with cold. The second muscular defect is the early onset of fatigue, often accompanied by cramp. There is a close resemblance in this to the claudication and cramp of fatigue in a limb the circulation of which is known to be impeded by an organic cause, and also to writer's cramp, which may be brought about by a localised pressure on the forearm when writing in a bad posture—that is to say, with the flexor surface of the forearm resting on the edge of a ledger or a desk.

That these disturbances of sensation and muscular power are not minor disabilities is clear from the fact that of six patients in Group 2 whose right hands were affected, four had already become left-handed when I first saw them. In the remaining two the utility of the right hand had become greatly impaired on account of weakness, clumsiness, and incapacity for sustained effort, although the patients had not become definitely left-handed.

In none of the cases did the nails atrophy or the skin become glossy, a minor degree of wasting—possibly from disuse—being the only atrophic change observed.

Discussion.

To some extent the foregoing cases recall those reported by Meige, Benisty, and Lévy,[1] under the title of "Impotence de tous les mouvements de la main et des doigts, avec intégrité des réactions électriques (main figée)." There is this difference, however, that in my cases there was no muscular spasm so long as the limbs were at rest, although minor cramps and spasms were brought about by exertion. Babinski and Froment,[2] who paid special attention to the condition of "congealed hand," as described by the authors mentioned above, differentiating it from other known organic affections and from contractures or paralyses of an hysterical nature, refer to purely paralytic forms unaccompanied by muscular spasm, and it is perhaps to this group that my cases belong. But I have not seen any paper dealing with these sympathetic nerve injuries in which the anatomical relationships of the wound track are given in exact detail. Babinski and Froment regard these disabilities as being of a reflex character analogous to the muscular wasting and weakness which accompany arthritis, and they look upon the symptoms as being produced in a large measure by lesions of the sympathetic system. They are careful to point out that with a long lasting diminution of blood flow and hypothermia a third factor may come into play—namely, the accumulation of physiological poisons in the affected parts. In their cases the hypothermia, in particular instances and conditions, was pronounced, the difference of surface temperature on the injured and sound limbs being as much as 8° C. In one case, after immersion of both limbs in water at 40° C. for ten minutes, the injured limb became hotter than the sound one by 1°–2° C.; and the return to normal was more rapid in the normal limb. This corresponds with my own observation in Case 12 of this paper.

That little attention has been paid hitherto to this type of nerve lesion is easily explained by the fact that sympathetic nerve injuries have been so often combined with wounds of other structures that their less dramatic manifestations have been obscured by more obvious damage such as severance of nerve trunks, arterial blockage, fractures of bone, and extensive lacerations of skin and muscle. Moreover, at the time of the war, little being known concerning the innervation of the blood-vessels, there was a tendency, in the absence of any satisfactory alternative formula, to diagnose the malady as "functional"; and it is interesting to note that with each of my Group 2 cases in which an official diagnosis had been made the label was "functional." One of the patients had undergone a course of psycho-analytical treatment for an entire year without any benefit.

That my cases were not examples of conversional hysteria seems to be certain (vide Nos. 12, 15, and 18). Even if my confidence in this opinion is not quite justified by the internal and particular evidence in each case, there still remains the fact of a definite and uncommon disability constantly associated with an equally definite and uncommon injury. In view of such an association it is almost impossible not to deduce a relationship of effect and cause between them; and it is hard to doubt that the underlying lesion, responsible for the sensory and motor defects of the hand, is a paralysis of the small blood-vessels. In other words, these vessels no longer have the power

of adapting the calibre of their channels to the changing needs of the tissues which they supply with blood. I have assumed, possibly, I admit, on insufficient grounds, that the paralysed capillaries remain more or less constantly dilated, while the arterioles which supply them are for most of the time and in ordinary circumstances contracted.

To explain this vascular paralysis in the hand following wounds of the forearm we are almost forced to believe in the existence of a special nerve tract which follows a path somewhere about the central axis of the limb and which regulates the calibre of the small vessels of the hand. That the nerve-fibres concerned are spread out and not condensed into a compact nerve is suggested by instances (Cases 2, 5, and 7) in which a lesion involving only part of the tract had occurred. Yet the tract cannot be much spread out, for partial injuries seemed to be less common than complete ones, although, perhaps, this argument is fallacious as the tests which I applied when collecting the clinical material were very primitive.

Where is this hypothetical nerve tract? Figs. 1 and 2 represent diagrammatically with such correct-

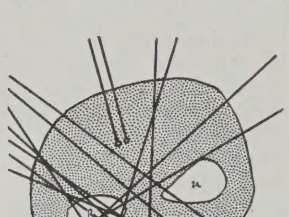

FIG. 1.—Group I.

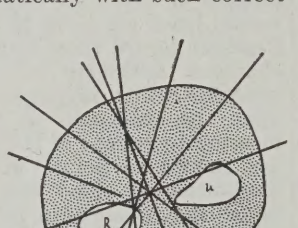

FIG. 2.—Group II.

Transverse sections of forearm showing diagrammatically the wound tracks in the Group I. and Group II. series respectively.

ness as could be achieved the paths of the projectiles which brought about the vascular paralysis. There are two obstacles to accuracy in such charts. First, a straight line cannot be used adequately to represent a gunshot wound. Secondly, unless we know in what position the forearm was at the moment of perforation we cannot exactly portray the passage of the missile through the limb by means of a chart. In some instances the soldier could say exactly in what posture he was when struck; one, for example, stated that he was carrying his rifle at the trail, another that both his hands were stretched out above his head supporting a sandbag. Where no such information was obtainable, the wound track could sometimes be elucidated by the structures divided, especially if bone had been broken. In other cases the matter was a pure guess. None the less, it is suggestive that a plotting of the supposed wound tracks upon a single chart shows approximately a common locus of intersection which is somewhere near and anterior to the interosseous membrane.

I am not aware of any fact which prohibits the supposition of a special nerve tract in the forearm controlling directly or indirectly the vascular adaptations of the hand. The anterior interosseous artery is, ontogenetically, the main artery of the forearm, being later displaced from this function by the median artery, which in its turn becomes replaced by the radial and ulnar arteries. Consequently, if there are nerves passing along the forearm to supply the capillary networks of the hand, we should expect to find them somewhere about the anterior interosseous or the median artery. To this extent theoretical considerations support the practical observations which form the basis of this little essay.

The vasomotor nerves supplying the web of a frog's foot were accurately traced by Langley.[3] He

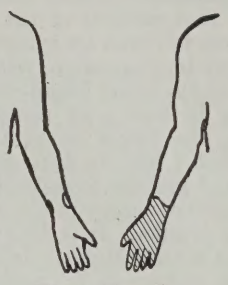

FIG. 3 (Case 1).

FIG. 4 (Case 2).

In these and subsequent figures the shaded areas represent reduced sensibility to pin-pricks. Entry and exit wounds are indicated by outlines. Figs. 3 to 9 show front and back of left arm.

found that the constrictor fibres for the vessels o the lower limb left the spinal cord in the third to th seventh spinal nerves, and, passing from these alon the rami communicantes, joined the sympatheti chain. Thence some passed to the sciatic nerve while others travelled along the arteries. Thos which accompanied the arteries apparently wer chiefly concerned with the calibre of the proxima portions of these vessels, while the vessels of the we of the foot were supplied by the sciatic nerve. Thu stimulation of the peripheral end of the divide sciatic nerve caused constriction of the vessels of th web, while stimulation of the sympathetic afte division of the sciatic nerve caused no trace of vaso constriction in the foot. These results held good fo mammals also, and they have since been confirme by Krogh [4] and Ebbecke,[5] both of whom failed t produce constriction of the vessels of the foot b stimulation of the femoral artery. Woollard,[6] alsc has found that the constrictor nerve-fibres of th

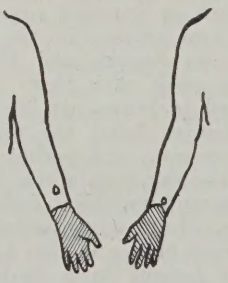

FIG. 5 (Case 3).

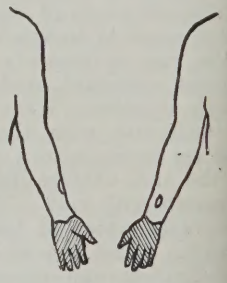

FIG. 6 (Case 4).

hind foot of the cat do not travel down with the mai arterial trunk but are derived from the adjacer peripheral nerve trunks, and his careful inquir confirms the findings of the experimenters mentione above. There is evidence that the same anatom holds good in man, for other surgeons besides myse have experienced a failure to bring about any durab vasodilatation in the hand or foot after periarteri sympathectomy of the axillary or femoral artery.

Earlier in this paper I have expressed the opinic that my patients suffered from a more or less pe manent capillary dilatation with contraction

arterioles, and this makes it necessary to accept the fact that the capillaries are normally under nervous control; an acceptance about which there need be no hesitation. Woollard [6] was able to trace a continuation of the sympathetic investment of the arterioles to the capillaries in the form of non-medullated fibres which did not appear to form any terminal

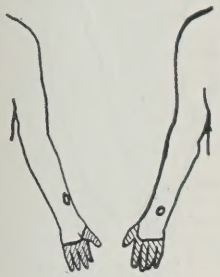

FIG. 7 (Case 5 on 27/10/17).

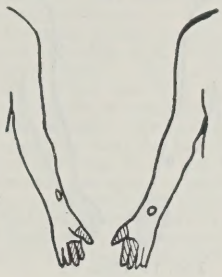

FIG. 8 (Case 5 on 1/11/17).

apparatus with the capillary endothelium. In a few cases, though not in most, these nerves could be traced to the finest capillaries. And Doi,[7] Gabbe,[8] Harris and Marvin,[9] and Krogh [4] have amply proved the occurrence of dilatation and constriction of capillaries in response to stimulation of nerves.

Admitting this fact of the nervous government of the calibre of the capillaries, it is impossible to escape from the logical conclusion that severance of the appropriate nerves will be followed by some form of vascular paralysis. That nervous influences are not the only agents of vascular control is now recognised, owing largely to the investigations of Dale and his co-workers on the action of histamine, and to Lewis's enlargement of this theme. Indeed, Lewis [10] regards the nervous mechanism of the small vessels in the light of a coarse adjustment only; a direct control by the tissue needs forming a fine adjustment of great precision. In the cases which I have recorded it is the coarse adjustment which has been damaged, and the limitations of the fine adjustment to meet the tissue needs form the symptomatology of these special lesions. Prominent amongst these limitations appears to be the failure of the vessels to react normally to heat and cold.

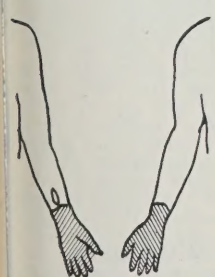

FIG. 9 (Case 6).

Lange, Ehrich, and Cohn,[11] by observation of chick embryo membranes, established that the calibre of capillary vessels responds appropriately to direct mechanical stimulation in the entire absence of any nerves, and that these reactions are similar, as a rule, to those which take place in normally innervated tissues; but it is noteworthy that heat and cold form exceptions, inasmuch as the non-innervated capillaries of the embryonic chick membrane do not alter their calibre in response to the application of thermal stimuli. This observation may be regarded as possibly bearing on the fact that the most outstanding feature of my cases is the failure of the small vessels of the hand to react appropriately to alterations of the external temperature.

Langley [3] showed that in the mammal the distribution in the skin of the sympathetic fibres contained in a spinal nerve at its union with a plexus is approximately the same as the distribution of the sensory fibres of the nerve, and I do not maintain that all the vasomotor fibres of the hand are gathered together in a single compact tract in the forearm. My view, subject to further information, is that the majority of vasoconstrictor fibres for the capillaries of the hand are loosely aggregated near the central axis of the forearm, while perhaps a few of the fibres remain outside this tract and accompany nerve trunks into the hand. Nevertheless, when the chief tract is interrupted the functions of the hand become defective in a manner that is characteristic, and which is not produced by any other pathological condition.

Illustrative Cases.

GROUP I.

CASE 1, wounded Sept. 2nd, 1917, and seen on Sept. 5th. Entry wound on radial border of left forearm, two inches above wrist. Fragment lying under skin of ulnar border of forearm. Fissured fracture of radius. Foreign body extracted. Ulnar artery tied. Anæsthesia as in Fig. 3. Muscle power cannot be tested.

CASE 2, wounded Sept. 26th, 1917, and note taken Oct. 3rd. Entrance wound radial side of forearm, three inches above left wrist. Exit two inches above wrist in mid-dorsal line of forearm. No complete fracture of radius. Radial pulse felt. Anæsthesia as in Fig. 4.

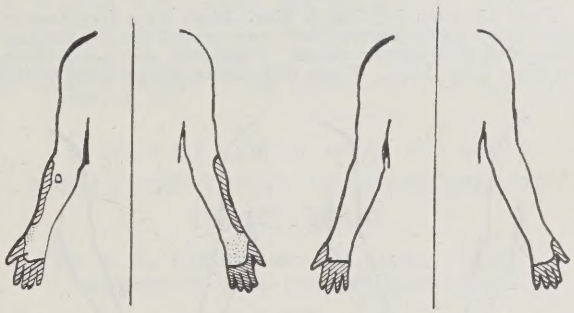

FIG. 10 (Case 7 on 16/10/17). Front and back of right arm.

FIG. 11 (Case 7 on 20/10/17). Back and front of right arm.

In the stippled area pin-pricks led to variable responses.

CASE 3, wounded Oct. 4th, 1917, and seen Oct. 5th. Entrance wound radial border of left forearm at junction of middle and lower thirds. Exit on dorsal surface of forearm towards ulnar margin, one inch above the wrist. Radial pulse felt. Complete glove anæsthesia as in Fig. 5.

CASE 4, wounded Oct. 26th, 1917. Note from C.C.S. states: "Compound fracture radius. Wounds excised, bleeding points tied, bipp." Seen on Oct. 28th. Entry wound over lower end of left radius on dorsal surface. Exit on radial border of forearm at a slightly higher level. Complete glove anæsthesia, unchanged on Nov. 1st. (Fig. 6).

CASE 5, wounded Oct. 26th, 1917. Note from C.C.S. states: "Through-and-through wound, just above left wrist-joint. Compound comminuted fracture radius and wound of radial artery. Wounds excised. Radial artery ligated. Foreign body removed. Flexor carpi radialis divided." Seen on Oct. 27th. Cannot move fingers. Nov. 1st: Sensation has partially returned (Figs. 7 and 8).

CASE 6, wounded Oct. 12th, 1917, seen Oct. 13th. Wound 2 inches long in anterior surface of left forearm in mid-line 3½ inches above wrist-joint. No exit. No œdema of hand. Can move fingers. Radial artery not palpable. Left hand colder than right. Hand "feels numb." Glove anæsthesia to pin-pricks up to a level ¾ inch below wound. Oct. 20th: No anæsthesia to pin-pricks. Left hand still colder than right (Fig. 9).

CASE 7, wounded Oct. 12th, 1917. Seen on Oct. 16th. Single entry wound in mid-line of anterior surface of right forearm, ½ inch above the middle. No exit. Radial pulse felt. Right hand colder than left. No œdema of hand or forearm. Movements normal. Oct. 20th: Partial recovery of sensation (Figs. 10 and 11).

CASE 8, wounded Oct. 13th, 1917. Note taken Oct. 15th. Small entry wound in dorsal surface of left forearm in middle third, a little to ulnar side of mid-line. Small exit on palmar

surface of forearm to radial side of mid-line and at a slightly lower level than entry wound. The ulna has been chipped but not completely fractured. Radial pulse felt. No œdema of hand. Left hand warmer than right. Has a feeling "like electricity" in his fingers. Movements difficult to test on account of pain. Oct. 20th: Partial recovery of sensation. Left hand still warmer than right (Figs. 12 and 13).

CASE 9, wounded Oct. 26th, 1917. Note taken Oct. 27th. Entry wound palmar surface of left forearm towards radial side. Exit on postero-internal border of forearm. Both wounds are a little below the middle of the forearm. Ulna fractured. Glove anæsthesia to pin-pricks as in Fig. 14.

CASE 10, wounded Oct. 3rd, 1917. Note from C.C.S. states: "E. and E. wound of left forearm. Excised. Radial vessels tied. Bipp." Good radial pulse. Movements complete. Complete glove anæsthesia to pin-pricks and light touch. "No pins and needles." Oct. 20th: Left hand colder than right. No anæsthesia to pin-pricks now. Patient says the tips of his fingers still feel numb (Fig. 15).

CASE 11, wounded Oct. 9th, 1917. Note from C.C.S. states: "E. and E. wound. Comminuted fracture of radius. Arm tense. Ulnar vessels divided. Ligated. Ulnar nerve not injured. Median nerve not seen. Track cleaned." Oct. 12th: Wounds are in upper third of forearm, one being situated on ulnar border of flexor surface, the other on the radial edge. Anæsthesia as in Fig. 16. Oct. 20th: Anæsthesia unchanged. Right hand considerably warmer than left.

GROUP II.

CASE 12, wounded March 29th, 1918, by a fragment of shell which passed through the lower end of the left forearm without fracturing the bones. Examined and notes taken on Sept. 30th, 1919. There is a scar in the mid-line of the

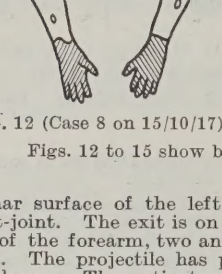

FIG. 12 (Case 8 on 15/10/17).

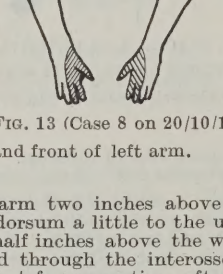

FIG. 13 (Case 8 on 20/10/17).

Figs. 12 to 15 show back and front of left arm.

palmar surface of the left forearm two inches above the wrist-joint. The exit is on the dorsum a little to the ulnar side of the forearm, two and a half inches above the wrist-joint. The projectile has passed through the interosseous membrane. The patient says that for some time after he was wounded the hand "felt numb, although he could feel with it all right." When the palmar scar is pressed upon a pain shoots down the index-finger. There is no anæsthesia or loss of muscular power. The left hand is slightly cyanosed and cold compared with the right, the coldness and blueness extending above the level of the scar. Patient states that he felt the cold very much in his left hand during last winter.

The following experiments were carried out. Both hands and forearms were placed in a hot cage and examined after a sufficient interval. Both hands were hot, red, and sweating. The left was more red than the right, but the surface temperature seemed the same in both. Ten minutes after removal from the cage, the hands and forearms in the meantime having been exposed to the air, the left hand was redder and warmer than the right.

On Oct. 2nd both hands were immersed in cold—not iced—water for five minutes, but this caused no blueness. On removal no difference of surface temperature in the two hands could be detected. Five minutes after the hands had been removed and dried the left hand was colder than the right.

This patient made no complaint about his old wound. He happened to be in hospital for another reason when the scars in his forearm were noticed, and the condition was investigated in order to discover if any lasting abnormal phenomena had followed this through-and-through wound of the forearm.

CASE 13, wounded Oct. 7th, 1917, and examined Nov. 2nd, 1920. The entry wound is on the radial border of the left forearm, just external to the radial artery, and the exit in the dorsum of the forearm on the ulnar side of the mid-line. Both wounds are at the level of the junction of the middle and lower thirds of the radius, which has been fractured and successfully plated. The entire left hand and fingers are cold as compared with the right, and they are also considerably thinner than their fellows of the right side. The colour of the two hands is the same, neither pallid nor cyanosed. Sensation to pin-

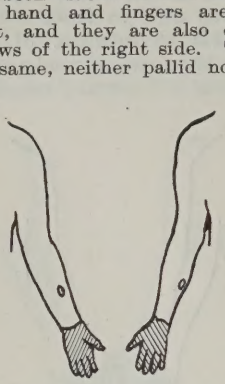

FIG. 14 (Case 9).

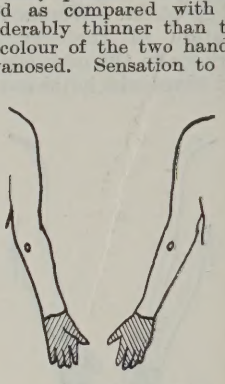

FIG. 15 (Case 10).

pricks is almost abolished in the tips of the fingers and thumb. He states that the hand feels the cold very much, and he has difficulty in carrying out fine movements with the thumb and fingers of the left hand, for example, unbuttoning and buttoning up his waistcoat. The movements resemble those of a man whose hand is numb with cold.

CASE 14, wounded Nov. 1st, 1918, and examined on Sept. 12th, 1922, when he showed scars from a perforating wound of the right forearm with fracture of both bones. The scars of entry and exit wounds are both large; one occupies the radial half of the anterior surface at the junction of the middle and lower thirds, and the other occupies the ulnar half at the same level. The right hand sweats and gets cold, but he has not become left-handed. He is a shop assistant. He gets cramp in his hand after writing about a page, and is clumsy with the hand in buttoning and unbuttoning his waistcoat, but there is no loss of sensation.

CASE 15, wounded Oct. 9th, 1917, and examined on Dec. 17th, 1920, when he showed a scar 5 inches long on the ulnar border of his left forearm, and another 4 inches long on the radial border of the same limb. Both bones are said to have been splintered. There is some wasting of the left forearm, but no paralysis. His left hand is slightly colder than his right, but he makes no complaint of coldness. Movements of the left hand are clumsy, and he is not able to perform fine movements well—e.g., buttoning his waistcoat. There is a reduction of sensation to pin-pricks up to the elbow—i.e., above the level of the wound. The fingers of the left hand are considerably smaller than those of the right, and the grip is diminished. He is a strong man, not in the least neurotic, and is in full employment.

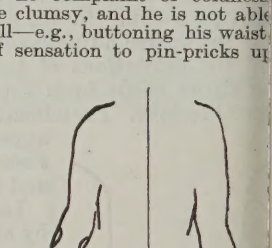

FIG. 16 (Case 11).
Back and front of right arm

CASE 16, wounded May 22nd, 1916, and examined on March 18th, 1921. He shows entry and exit wounds in the right forearm with a fractured radius at the junction of the middle and lower thirds. The entry is just to the ulnar side of the mid-line on the anterior surface, and the exit in the mid-line of the dorsal surface. He cannot extend his wrist beyond a straight line, but movements of the radio-ulnar joint are normal, and his hands are equal in temperature. There is some loss of power in his right hand. Touch sensation is normal, but sensibility to light pin-prick is lost to the upper level of the wounds back and front. He can distinguish the point from the head of a pin. Light pin-pricks feel like touches, but localisation is accurate and joint sense normal. There is no other loss of sensation though he says that the hand feels numb. Originally a right-handed man, he now uses his right hand but little. It is wasted and soft, while his left hand is horny. He has some difficulty in buttoning and unbuttoning his waistcoat with right hand; he goes to work at it like a child, and there is a good deal of clumsy fumbling. He uses both hands, but can do it with one. He has never been able to write.

CASE 17, wounded Sept. 1st, 1918, in right forearm, which shows scars of a perforating wound through the interosseou

space just below the elbow, in about the mid-line back and front. The right hand is wasted and always cold, and he has become left-handed since his wound. There is no paralysis. The right radial pulse is only just palpable, but there is no anæsthesia to touch. Pin-pricks are not felt as pain unless the pin is thrust deeply in, and then the pain is but slight. He will readily thrust pins into his right hand. He can distinguish pricks from touches, has no loss of sensation to touch, and localisation is perfect.

CASE 18, injured Feb. 21st, 1908, by a steam-ventilating fan which fell on to his forearms. A note was taken on July 26th, 1921. Copy of "Hurt Certificate": "A deep wound of the outer side of left forearm at the upper part. The supinator longus was almost divided and evidently some branches of the musculo-spiral nerve. Also a severe injury to right wrist." He states that the tips of the fingers of his left hand are a little numb as compared with those of the right hand. In cold weather the numbness amounts to complete insensitiveness, so that he has burnt his fingers with a match without noticing it at the time. He does not smoke. Muscular weakness accompanies the numbness, and he cannot do fine work with the fingers of the left hand. Pin-pricks are distinctly less painful in the left fingers than in the right, although there is no appreciable coldness of the left hand compared with the right (this was on a very hot day).

Additional Note.—The wound of the left forearm is in the upper third and comprises the radial half of the anterior surface. There is no paralysis. It is to be noted that the wound of the right wrist was more severe than that of the left forearm, dividing (all) the extensor tendons of the fingers, so that the symptoms cannot be attributed merely to the magnitude of the scar, or to a "functional" cause.

CASE 19, wounded on July 31st, 1917, in the left forearm. A note was taken on July 29th, 1921, when he showed scars of a through-and-through shell wound with a fractured radius. For the first nine months or so after the receipt of this wound the entire hand was numb, then sensation returned in the little and ring-fingers. On July 29th, 1921, his left hand is greatly wasted as compared with the right, the wasting not being confined to the distribution of the median nerve. He has no paralysis whatever, nor actual loss of sensation to pin-pricks. Pressure on the anterior scar causes pain in the distribution of the median nerve. The left hand is cold as compared with the right, and there is an area of diminished sensation to pin-pricks.

CASE 20, wounded in the right forearm on May 2nd, 1915, and noted August 18th, 1921. The entry wound is just in front of the ulnar border of the forearm in its middle third, and the exit on the radial half of the dorsal region at the junction of the middle and lower thirds. The radius has been fractured. The exit wound is large. He has loss of sensation to light touch, and diminution of sensation to pin-pricks over all the fingers and thumb of his right hand, and says that the right hand is weak and grip is diminished.

CASE 21, wounded July 7th, 1916, by a rifle bullet. The entry is at the junction of the middle and lower thirds of the right forearm to the radial side of the mid-line. The exit is at the same level behind, but to the ulnar side of the mid-line. He is said to have had a fracture, but there is no evidence of that now. The entry and exit wounds are small.

For the first fortnight he says the hand and arm were numb below the wound. Then pain came on and went right up the arm into his neck—"felt like 101 teeth all aching"—and kept him from sleep. The pain gradually became confined to the arm, and disappeared about three months later. When the note was taken (Nov., 1921) he had had one year's treatment at a special out-patients' clinic by psycho-analysis, without any benefit, and the condition was again diagnosed as "functional." Seen again in July, 1923, he was found to suffer still from considerable loss of function in the right hand, which shows signs of atrophy, is tremulous, cold, sweating, weak, and subject to cramp. He has become left-handed. The grip in the right hand is 20 pounds and in the left is 110 pounds. The arterial pressures in the right and left upper extremities are equal, and there is no obvious difference in the filling of the veins. The ring and little fingers are contracted in a manner suggestive of ulnar nerve injury, though this contraction seems only to have appeared recently.

CASE 22, wounded on March 21st, 1918, in the right forearm, and note taken May 3rd, 1921. The entry wound is to the ulnar side of the mid-line in front—i.e., between the median and ulnar nerves, just above the wrist. The exit wound is on the radial side of the mid-line behind. The radius has been fractured. Since being wounded he has become left-handed, even for writing, because his right hand is weak. He sweats a lot in summer and is cold in winter. Sensation in the right hand is normal, except that the tip of the forefinger gets numb. He has no paralysis, tenderness on pressure of the scars, or trophic changes.

CASE 23, wounded by a rifle bullet in the left wrist on June 26th, 1917, and note taken August 26th, 1921. The entry wound is in the thenar eminence, just to the ulnar side of the base of the first metacarpal. The exit wound is on the ulnar border of the wrist, half an inch below the head of the ulna. Movements of the wrist-joint are normal. The hand gets crampy and cold in winter, and is at times practically useless; it is slightly colder than the right now but shows no trophic changes. Touch and pain sense in the left fingers are lessened as compared with the right.

CASE 24, in November, 1920, received a severe blow on the right thenar eminence from the back-fire of a motor handle A note was taken on July 29th, 1921, when he complained that (1) his thumb (not the fingers) gets quite insensitive in cold weather, while it is always less sensitive than the fingers or than the other hand, even when the temperature of the hands is equal; (2) his forearm gets easily tired on exertion—enough to disable him. He can write normally to start with, but begins to have difficulty after writing about 200 words, and then has trouble in shaping his letters. The pulse in the right thumb is more distinct (more collapsing?) than in the left thumb. There is a diminution of acuteness of appreciation of pin-pricks in the right thumb.

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EFFECT OF ADDED IRON ON THE HÆMATOPOIETIC PROPERTIES OF DRIED MILK.

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IN a series of investigations whose brilliant execution has rendered them deservedly classical, despite the short time which has elapsed since they were begun, Steenbock and Hart and their colleagues [1] at Wisconsin have demonstrated the essential synergetic rôle played by copper in hæmoglobin formation. During their investigations they elaborated a technique for producing nutritional anæmia, sometimes referred to as "milk anæmia," in the albino rat. This has rendered possible an extension of their investigations both in their own laboratories and elsewhere.

In a recent paper Supplee [2] and others have reported the effect of different methods of drying on the iron content of milk, and have concluded that the actual process of drying milk on polished rollers is sufficient to increase its iron content to a point adequate for normal hæmatopoiesis. They found that this was not the case when milk was dried by the spray process, nor was there any appreciable increase of iron in liquid milk after it had been boiled for two minutes.

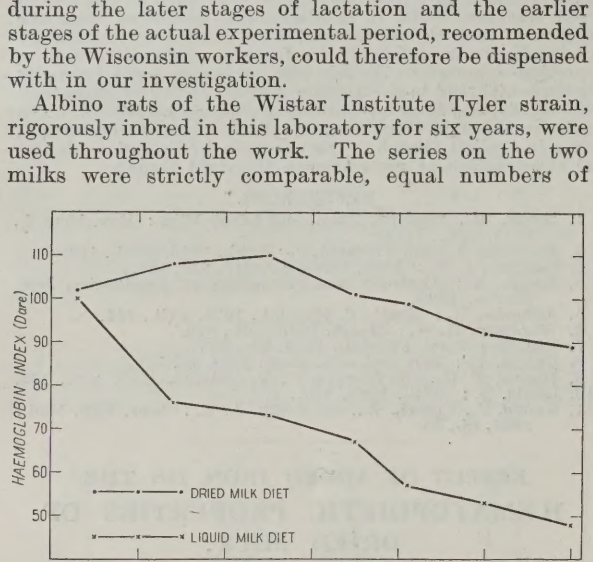
Telfer [3] has emphasised the need to consider carefully the amount of iron present in the diet of infants, and has specially called attention to the probable deficiency of many proprietary infant foods in iron. His conclusions, as well as the paper of Supplee and his co-workers, were published subsequent to the termination of the investigation described below. This had for its object to ascertain whether the incorporation of a soluble iron salt in a modified roller-dried milk during manufacture would confer on that product any hæmatopoietic superiority over liquid cow's milk. The amount of iron added was sufficient to raise the iron content of the dried milk, reconstituted one in eight, to 40 parts per million. This is approximately

three times the normal iron content of liquid cow's milk.

TECHNIQUE.

The technique used in this experiment was similar to that advocated by Hart, Steenbock, and co-workers. Because, presumably, our animals had lower iron reserves than theirs, we found in a preliminary experiment that, taken straight from stock diet and given milk only, they began immediately to show the lowering of hæmoglobin content characteristic of experimental anæmia in rats. The "running out" period during the later stages of lactation and the earlier stages of the actual experimental period, recommended by the Wisconsin workers, could therefore be dispensed with in our investigation.

Albino rats of the Wistar Institute Tyler strain, rigorously inbred in this laboratory for six years, were used throughout the work. The series on the two milks were strictly comparable, equal numbers of



Effect of exclusive milk diets on hæmoglobin level in albino rats (each graph average from five animals).

isogenic animals (animals of the same sex and litter) being present in each series of three males and two females. Following the recommendation of Waddell, Steenbock and co-workers [4] we did not make hæmocytometric determinations, and the hæmoglobin estimations were carried out on a Dare hæmoglobinometer. Although this instrument, being calibrated for normal human blood as 100, does not give values in any sense absolute when used for rats' blood, it was found to give consistent and reproducible results with very little practice, and since only comparative results were wanted, proved excellently suited to the purpose of the investigation. The control series was given fresh cow's milk ad libitum. The experimental series was given the dried milk with added iron, reconstituted with seven times its weight of water, also ad libitum. The animals on the dried milk showed an almost constant normal hæmoglobin index throughout, while those on fresh milk lost hæmoglobin rapidly. The differences in hæmoglobin content are shown in the accompanying graph, where the values for the animals in each series are averaged and plotted against time. In the control series it was found impossible to obtain a blood sample for one of the animals on the thirty-fifth day of experiment, so that the last three points on the graph for this series represent the average for four animals only (see Figure).

RESULTS.

Such differences as were shown by the animals can certainly not be attributed to differences in food intake. This was measured, and was found to be very nearly constant, about 40 g. liquid milk per rat per day, and almost identical in each series, being, if anything, lower for animals receiving the dried milk than for the controls.

For some reason the animals on the liquid milk grew slightly more than those on reconstituted dried milk, the respective average total increases being 28 and 35 g. in 60 days. This is contrary to the findings of the Wisconsin workers, but the differences in growth-rate are quite probably not significant. It will be further recalled that the Wisconsin investigators fed the experimental diet for 40 to 60 days before beginning to make hæmoglobin determinations. During this "running out" period weight increases. In our animals reduction of hæmoglobin and loss in weight seem to occur at different stages, the former beginning with the experimental diet, and the latter probably a few weeks later, as with the Wisconsin animals. Further investigation of this discrepancy might throw interesting light on the connexion between growth-rate and hæmoglobin content. The slight fall in the hæmoglobin index of the series on dried milk is also probably not significant, since it is known that the infantile level is distinctly higher than the adolescent.[5] The differences in the iron and copper contents of the two diets are shown in the accompanying table (expressed as parts per million of liquid milk used).

	Iron.	Copper.
Raw milk (*a*) ..	.. 1·5 to 2·0 ..	.. 0·4
Dried milk S.G. (*b*) ..	5 ..	.. 0·23

(*a*) Iron taken as 1·5 to 2·0 mg. per litre. Copper taken as 0·4 mg. per litre, an average of the figure given as average by Supplee and Bellis [6] and the figure found by Hart.
(*b*) Figures from determinations in samples of actual powder used.

In the next table are given the actual average weekly intakes per animal of iron and copper respectively in the two series, based on the analytical figures given in the previous table.

	Iron (mg.).	Copper (mg.).
Raw milk ..	.. 0·5 to 0·7 ..	.. 0·13
Dried milk S.G. ..	1·7 ..	.. 0·08

According to the Wisconsin workers the weekly requirement of copper by young rats on a milk diet is 0·06 mg. This was doubled in the case of our raw milk diet and cannot therefore have been the limiting factor, as witness the lower intake on the dried milk which brought about better or normal hæmatopoiesis and was actually inferior to raw cow's milk as a source of copper. The low, though adequate, copper content of the dried milk S.G. is possibly associated with the fact of its careful conditions of manufacture in New Zealand, and also with the fact that in the process of humanisation some 30 per cent. of pure lactose is incorporated in it.

It appears, therefore, that the recognised low hæmatopoietic properties of milk solids can be materially enhanced by drying in the milk appropriate quantities of a suitable iron salt, and that in this way a dried milk may be prepared containing sufficient iron and copper to allow normal hæmoglobin formation in the young growing albino rat.

The feeding and care of the animals used in this experiment were undertaken by Miss E. Allchorne, and the hæmoglobin determinations were made by Miss V. Hazley, to both of whom I wish to express my thanks for their collaboration.

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CLINICAL AND LABORATORY NOTES

MANGANESE IN FOODSTUFFS.

ITS POSSIBLE RELATION TO CIRRHOSIS OF THE LIVER.

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THE association of cirrhosis of the liver with chronic alcoholism is plain enough, but there are many difficulties in the way of believing that the liver damage is caused directly by the alcohol. The Hursts [1] showed that manganese salts are particularly effective in producing experimental cirrhosis in rabbits, and it occurred to us that there might be some peculiarity in the diet of drunkards which led to their taking in more manganese than ordinary people. In particular we thought of the tasty addiments with which a fading appetite may be encouraged—pickles, winkles, anchovies, sauces, and such like.

Manganese is a widely distributed element and is present in varying amounts in most plants, particularly in the leaves of trees; hardly any is found in the substance of seeds. It does not accumulate in the bodies of vertebrates but some invertebrates contain considerable quantities. Thus, Bertrand,[2] insisting that it is a normal constituent of all animals, found about 0·02 to 0·07 * in the flesh of various animals, an indeterminate trace in cow's milk, and 13 in scale insects, 44 in crayfish, 11 in winkles, 15 in scallops, and 30 in a fresh-water mussel. Lindow and Peterson,[3] in a survey of foodstuffs, found from nil to 0·05 in fish and flesh, 0·9 to 1·2 in liver,† 0·5 in yellow corn, 0·4 in potatoes, and an average of 7 for leafy vegetables with a maximum of 22 in a sample of lettuce. Bradley [4] found as much as 1500 in fresh-water mussels (which are sometimes eaten, but are certainly not tasty) and quantities up to 3900 have been found in land mollusca, though the edible sorts of snails have only 10 to 20.[5] Hence, a diet made up of the normal staples would not contain much manganese except for vegetables; various curious substances might add a good deal.

Our estimations were made on material dried at 110° by the simple method given by Bradley (loc. cit.) which seems accurate enough for the purpose. The substance is ashed, melted with potassium nitrate, dissolved in nitric acid, and boiled with potassium persulphate and silver nitrate; the resulting permanganate is compared colorimetrically with standard solutions. The minimum amount detectable in this way is about 0·01 mg. so that, using about 1 gramme of material nil in our results means a content of less than 1 on our scale. We are much indebted to Dr. E. J. Allen, F.R.S., of the Plymouth Laboratory, and to Capt. G. C. C. Damant, R.N., for getting us material.

Our results, set out in the Table, entirely failed to confirm the guess with which we had started; the figures may, however, be worth putting on record. We were particularly suspicious of shell-fish which seem often to be sold outside public-houses, and it is true that winkles (3 to 16) and scallops (trace to 40) may contain considerable amounts with rather less in mussels and oysters. But cockles, whelks, and limpets showed none, and the following "relishes" gave negative results: Bisto, Gentleman's Relish, Marmite, tomato ketchup, essence of anchovy, salad dressing, O.K. sauce, chutney, pickles (3 sorts), lobster paste, mustard, capers and carroway seed. Spices, especially cloves, had more. On the other hand, tea-leaves (Indian and China) gave 27 to 43; an ordinary cup of tea contains in solution, about as much manganese (0·1 to 0·2 mg.) as six winkles, and 2 or 3 oz. of cabbage or lettuce would generally have as much. Taking into consideration the quantities of these different things which anyone is likely to consume, it looks as if a vegetarian teetotaller will probably take in more manganese than a heavy drinker.

	Manganese mg. in 100 g. dried.		Manganese mg. in 100 g. dried.
Winkle (*Littorina littorea*)	Tr. to 16	Tea	27 to 43
Whelk (*Buccinum undatum*)	Nil	Coffee	Tr. or nil
Purpura lapillus	Nil	Cocoa	Tr.
Trochus cinerarius	Nil		
Limpet (*Patella vulgata*)	Tr. or nil	Mixed spice	14
Crepidula fornicata	10 to 17	Cinnamon	2
Cockle (*Cardium edule*)	Nil	Ginger	4 to 12
Oyster (*Ostrea edulis*)	4	Coriander	10
Mussel (*Mytilus edulis*)	Nil to 4	Cloves	48 to 50
Scallop (*Pecten opercularis*)	Tr. to 40	Vinegar	1
,, (*P. maximus*)	5	Curry powder	4
		Olives (flesh)	6
Shrimp (bottled)	Nil to 4	Pepper	10 to 20
Prawn (bottled)	Nil	Cayenne pepper	2 or less

Tr. = trace.

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* Mg. per 100 grammes dried material—i.e., parts per 100,000; we use this notation throughout.

† cf. Titus Cave and Hughes (Jour. Biol. Chem., 1928, lxxx., 65, and 1929, lxxxiii., 463) on the use of manganese as a supplement to iron in the cure of nutritional anæmia in rats. Bertrand also noted the relatively large amount in liver.

INTRAVENOUS MORPHINE IN CORONARY THROMBOSIS.

BY FREWEN MOOR, *M.C.*, M.D. CAMB.

AT 1.15 A.M. on Sept. 6th, 1930, a man of 54 was awakened by violent substernal pain; he had a history of a similar attack in 1928, and when I arrived at 2 A.M. his wife had already given him two capsules of amyl nitrite, which had failed to give him any relief. He was very pale, sitting up in bed and moving about a good deal, not very dyspnœic, but obviously in great agony. The pulse was fairly strong, the pulse-rate 44, irregular, and the heart sounds barely audible. An injection of gr. $\frac{1}{3}$ morphine with gr. 1/120 hyoscine failed to give him any ease in a quarter of an hour, so gr. $\frac{1}{3}$ morphine was injected intravenously. The effect was dramatic, and within half a minute the patient became quiet, complaining only of slight oppression beneath the upper part of the sternum; the pulse-rate was 66 and regular. He went to sleep almost at once, and awoke six hours later with slight substernal discomfort, which lasted for three days; no further morphia was needed.

At 9.15 A.M. next day the pulse-rate was 48, mostly regular, and the heart sounds were normal; the blood pressure, which in April, 1930, had been 174/90, was 108/80. During the day the temperature rose to 100·6°, and remained raised, 102·2° being reached on the fourth day. Three days later the pressure had fallen to 96/60, and a polygraph showed incomplete

heart-block. Auricular contractions were plainly heard in the longer pauses at the apex; the apical first sound was reduplicated, and the first half of the reduplication had exactly the same muffled quality as the sounds heard during the pauses, so that I wonder whether audible auricular beat is the true explanation of the split first sound so often heard in cases of myocardial degeneration. The a-c interval varied from about 0·2 to 0·35 second, thus accounting for the great irregularity of the pulse, which at first suggested auricular fibrillation; some ventricular beats were missed altogether, some were normal in time, and some were delayed.

On the fifth and seventh days pericardial friction was heard, the loudest point being in the fourth space at the left sternal edge; it consisted of a loud, short rub preceding, but separated from, the first sound, and a fainter rub coinciding with the first sound. At the apex the first sound was reduplicated, and I feel certain that the roughened surface was mainly over the auricles. His recovery has been uninterrupted, and now (seven weeks later) he is beginning to get up.

I think the diagnosis of coronary thrombosis, partially involding the bundle of His, is reasonably certain on clinical grounds. I do not know whether the intravenous method of giving morphine is altogether safe, but it was certainly most effective in this case.

Westgate-on-Sea.

MEDICAL SOCIETIES

MEDICAL SOCIETY OF LONDON.

AT a meeting of this Society held on Oct. 27th, the President, Dr. R. A. YOUNG, being in the chair, Sir ALMROTH WRIGHT, F.R.S., gave an address on the

Prophylactic and Therapeutic Values of Vaccines.

He reminded his hearers that it was now 28 years since he wrote his first paper on vaccine therapy, and that in it he had suggested that the physician of the future would be an immunisator, by which he meant he would be a vaccine therapist. To-day he would reconsider this position, and see whether anything had to be taken away from, or anything added to, what was then said.

FOUR METHODS OF TREATMENT.

Sir Almroth discussed four methods of treatment. One was the expectant method, in which the doctor did nothing but looked on. The second method was to carry out surgical extirpation, such as for tuberculous glands; he had seen streptococcal glands extirpated. The third method, which was being introduced at the time of his first lecture, was that of serum therapy—i.e., the injection of blood derived from animals which had been copiously inoculated. The fourth, that in which the profession had most confidence, was treatment by antiseptics. Nothing further need be said about the expectant method; it was due to callousness, or pessimism, or defeatism. Extirpation was introduced by surgeons and was given up by them. It had been assumed that the whole of the bacterial infection could in this way be got rid of, but when it was found that the patients required further operation, the second coming quickly after the first, surgeons discarded that means. The next method, that of serum therapy, had justified itself in connexion with diphtheria antitoxin, and it was assumed, by a process of generalisations of ignorance, that what happened in the case of diphtheria could happen in regard to any other microbial disease. As to the antiseptic method, a little more had to be said. The laboratory study of antiseptics was initiated when he was in South Africa, and people treated cases of pneumonia by giving creosote and other antiseptics by the mouth. To test the matter he took creosote and other antiseptics, and added them to blood containing pneumococci, and in each case the microbes grew as well when the antiseptics were added to the blood-serum as when they had not been added. At that time a new method came out, chemotherapy, and one of the drugs prepared was optogen, which was said to be very efficacious in killing the pneumococcus. He found that this, even when diluted to 1 in 400,000, did its work in this respect very effectively. The antiseptic method was applied largely in the late war, but it made the wounds no better. That was because the fluid was a corrupted fluid; trypsin corrupted the lymph, and every microbe multiplied in those wounds. These he called purulated unrestricted bacterial infections.

There were two methods of treating wounds which gave good results, in that they got rid of this purulated infection and reduced it to a restricted serophytic infection, and these he grouped together. One was his method of putting a salt solution into the wound, the result being a great flow of lymph, killing all microbes in the wound except the streptococcus and staphylococcus. Even these grew only in small numbers in serum which came fresh from blood-vessels. The other method which was successful was Carrel's method. Carrel worked with surgeons at the front, who extirpated all the putrid portions of tissue as soon as the wounded came in, and kept the wounds clean by giving perpetual irrigations of hyperchlorides. In both these methods staphylococci and streptococci remained behind; both caused a flow of serum into the wound, and so the methods could be bracketed together. When a wound was in a condition when there was a restricted culture of serophytes, and the serum had got its normal properties, the wound could be closed. He had never yet met a serum which was effective in killing microbes when added to normal blood. Prof. A. Fleming, at St. Mary's, had devised three methods which ought to be taught in every medical school, methods which demonstrated that the introduction of antiseptics into a wound or into blood fluids or into lymph did nothing but make the conditions worse. These Sir Almroth set out in chart form. He suggested that the profession should go to the Minister of Health and say: "As this method has been proved wrong, would it not be well to try to teach people so, and issue a command?" In the past, Government forbade people to inoculate small-pox into others, and they might forbid the antiseptic treatment in the same way. The profession could not do it, because it had taught the public to use antiseptics, and, if a doctor refused to use them, a change of doctor would ensue.

BACTERIOPHAGE AND CHEMOTHERAPY.

The speaker, having found that the other methods must be discredited, said: "Let us try to immunise." Since then, two methods had come up: (1) chemo-

therapy, started by Ehrlich, and (2) bacteriophage. There was a bacterial diastasis which had an action on microbes, and the method consisted in taking a staphylococcus culture, one which dissolved of itself. When inoculated it contained derivatives of the bacterial culture and something which dissolved them. If good results followed inoculation of the mixture it could be attributed to the lytic power in it, or to the fact that there were bacterial elements in it. So that at present it could not be distinguished from active inoculation, except that Carrel had published a paper concerning what he did in India in cholera. He gave the worst cases a teaspoonful of bacteriophage to cholera, and they practically all got well; at any rate, the mortality came down from 60 to 6 per cent., as was testified by three men, a great achievement. It was yet early to say that this applied to all diseases. A more interesting process was chemotherapy, which was an improved form of antiseptic treatment. Ehrlich always had the idea that if he could find a substance which had a specific action on a particular microbe being dealt with and leave the body unaltered—i.e., which would not kill the man but would kill the microbe—it would be useful. Sir Almroth wished to speak of three of these agents. The first was "606." Ehrlich had sent him some of the first batches manufactured, and when the drug was applied to some cases of syphilitic rupia in the wards in two days the rupia was gone or greatly improved, and the streptococci were dead. It might be said that the syphilitic spirochæte was killed, and therefore the streptococcus died a natural death—a difficult doctrine. Or it could be said that the substance killed the streptococcus as well as the spirochæte. This doctrine was worked on and tested during the war by Dr. L. Colebrook and Capt. S. R. Douglas. They found that "606" exerted a lethal action in serum upon the staphylococcus and streptococcus. But in chemotherapy it was not a mere question of finding that substance which, put into serum, would kill the microbe; it had to be proved in the blood also, and one had to ascertain whether it killed white corpuscles as well as the virulent organisms. It had to be decided how high in strength one could go without poisoning the white corpuscles, and how long this must be in contact with the organisms to kill them without corpuscle damage. It was found that this drug did kill streptococci, but it took three hours of contact to do so. And the strength had to be only just short of that which would kill the corpuscles. There was no drug which would kill the microbe only without poisoning the white corpuscles. Moreover, owing to contact with the body fluids, it was difficult to maintain the drug at the strength at which it was put in. In the case of optogen, used against the pneumococcus in South Africa in a dilution of 1 in 400,000, this killed the organism in serum, but when applied to patients with the disease it did not give striking results. It apparently acted also on the eyes, and there were cases of temporary blindness following its use in pneumonia cases. The path of the chemotherapist would be a very complicated one. During the war it was suggested that flavine might be used for killing microbes in wounds, but Prof. Fleming found that though it did not kill white corpuscles instantaneously, if the blood was cooked for a few minutes it destroyed the white corpuscles. When flavine was put into a wound it was picked up by muscle, which it stained yellow, and by dressings and by various tissues, and much of its power was lost in that way.

VACCINE THERAPY.

Thus was the profession thrown back on this method of immunisation or vaccine therapy. Here was a larger scope for dealing with patients. The more thoughtful members of the profession did not use a drug because they had heard of a case in which it was successful; they asked to know the principle on which the drug was recommended and what laboratory work justified it. When the speaker introduced vaccine therapy, he asked whether he could settle a principle for it, reflecting that tissues which were locally infected were doing their best to kill the microbes there, but all the other tissues in the body were idle and not participating in casting the intruder out. He would now state the case somewhat differently. It was necessary to devise a method to show that phagocytosis, which had been thought to be only an agent for killing microbes, was activated by the vaccines; and for that purpose the opsonic index was developed. At that time he tested only the serum, not the white corpuscles, because he had satisfied himself—erroneously—by experiments on people who had only local infections, that the white corpuscles did not vary, but the serum did. He thought it safer to test the effect of every inoculation, and he carried out this laborious process, doing in hospital some hundred thousand tests. Much was learned from this work as to dosage; for instance, if the dose used were too large, a negative phase resulted, and there would be less phagocytosis afterwards. To a healthy man any dose could be given without killing him, even without producing a negative phase. But to a man already ill, and therefore having already a large supply of microbes, the dose given must be small. The smaller the infection a man had, the larger the dose which should be given him. Not infrequently, in the case of tubercle, the patient with a high opsonic index died, and that showed there was some element in the matter not understood. Then Shattock and Dudgeon wrote a most important paper on vaccine therapy. They tested pyrexial cases, testing corpuscles and serum separately, and they found that when people had fever the white corpuscles often lost their phagocytic power. Therefore one must take into account the leucocytic efficiency as well as the power of the serum to aid phagocytosis. Progress had now gone so far that it was no longer necessary to test the blood in routine cases; and in testing the bactericidal power confirmation was obtained. But in dangerous cases some help was required to know whether or not active immunisation could be applied. When the conditions were favourable and there was a purely surface infection, where there was an uncorrupted serum and the white corpuscles had access to every part, complete results could be obtained. There remained the case in which ideal conditions did not exist for killing the microbes—namely, where there was a surface infection and there was no pool of serum available, but only a mere film over thes urface. In infections one could not trust to phagocytosis being complete, and he submitted that vaccine therapy was useful in conditions in which physiological results would not be obtained.

Where should vaccine therapy be applied, and what ought to be done in the cases in which it was not applicable? Obviously it should be used in incipient infections and localised infections. There was a large class of patients in every casualty department, who had septic wounds which were treated by opening up the wounds and applying antiseptics. He thought one was entitled to look to the machinery

of Government and ask that they should ordain that antiseptics should be given up and vaccines used in those cases. And there was the kind of case having a prolonged infection, grave cases which might affect the highest in the land. These seemed to be treated by the expectant method, probably because those in charge did not want to take the responsibility of doing vaccine therapy. The expectant treatment might or might not succeed; what was required was to apply to these patients the best possible method.

DISCUSSION.

Prof. JOHN EYRE considered that the antibodies which were stored up in the system and were liberated as a result of vaccine therapy still had their work to do, in spite of the prominence now given by Sir Almroth to the leucocytes; the lecturer seemed now to be unduly deprecating his earlier work.

Dr. H. H. MILLS remarked than an increasing number of people now asked for vaccination against catarrh and colds in the autumn, and it was probable that the general results must have justified this increasing popularity of the process. Probably it was on the principle that if a multivalent vaccine was used, one of them would hit the target.

Dr. GEOFFREY MARSHALL said that prophylaxis against infection occurring after inoculation had proved a remarkable success; the almost complete absence of enteric fever among our troops in the late war must be attributed to vaccine inoculation. Vaccines had also been used on an enormous scale in the treatment of toxæmic diseases, such as pulmonary tuberculosis. The evidence in favour of the use of tuberculin had been, he considered, dubious, and the same could be said of vaccines in toxæmic diseases.

Mr. HAROLD DODD said he had seen very good results from mercurochrome, but he had had great difficulty in knowing when to apply these further agents. He asked what was the best wound dressing for surgical cases with cellulitis and a profuse discharge, also with septicæmia, and when ought chemotherapy or transfusions to be used.

Dr. C. W. BUCKLEY spoke of having for several winters used the St. Mary's Hospital vaccines against catarrh, and at first he seemed to get good results. Second visits also gave good results, but should patients return for the course on a third occasion, the result was the reverse; a negative phase was set up, and an acute catarrhal attack followed. In vaccinating against boils he had noted a similar failure on a third injection. A similar failure occurred in later uses of manganese, and the same could be said of inoculations of the regulation commencing dose of 5 to 10 millions of *Streptococcus viridans* for infective arthritis; but he had better results when he commenced with half a million.

Sir WILLIAM WILLCOX alluded in warm terms to the work of Sir Almroth Wright in teaching the profession sound conceptions of disease. He spoke in detail of conditions in which the body was sensitised, and in which, therefore, vaccines should not be used. Instances were exophthalmic goitre, gouty conditions, and asthma. Vaccines had a profoundly beneficial effect in prophylaxis, as shown by statistics concerning typhoid fever, plague, and cholera. Before using vaccines it was of great importance to investigate whether there was any focus of infection in the body and to deal with that. In such conditions as arthritis he did not think of using vaccine until a thorough overhauling had been carried out.

Mr. E. B. WAGGETT asked whether in chronic focal infections there was any merit in the use of vaccines before operation. His feeling was that it was better to get rid of the focal infection first. He had seen cases of dental sepsis in which serious symptoms, including mental ones, followed the use of a minute dose of vaccine.

Prof. A. FLEMING gave a general account of the recent work, illustrated by instructive cases from his practice.

Mr. ZACHARY COPE emphasised the importance not only of excision of an infected focus, but also of incision to liberate toxic products; this often set the patient well on the road to recovery and enabled him to make use of his own powers of healing.

The PRESIDENT was much impressed with the value of tuberculin as used by his surgical colleagues in localised forms of tuberculosis, but he was anxious about it in medical cases. In the latter domain the number of tuberculin preparations was very large. He paid a tribute to Sir Almroth for the great work he had done for medicine.

Sir ALMROTH WRIGHT replied at some length. Pulmonary tuberculosis, he said, was a disease with many foci, and hence the dose given must be very small. Koch, unfortunately, gave maximum doses, but though Koch was a great man he was the worst conceivable clinician. He thought that to take out many teeth at a time, or the tonsils in the case of a heavy infection, was a hazardous proceeding. He thought that in the future there would be dissolved vaccines available, so that dosage could be standardised.

ROYAL SOCIETY OF MEDICINE.

SECTION OF PATHOLOGY.

A MEETING of this Section was held on Oct. 20th, when Prof. E. H. KETTLE delivered his presidential address on

The Relation of Dust to Infection.

He said that hitherto the pneumonoconioses had received little attention, but it was evident that their importance was increasing.

The disease in its most concentrated form was best seen in the gold-mining industry of South Africa, where in the last 20 years £12,000,000 had been paid in compensation to silicotics, mostly Europeans, and their widows and children. In recent years an initial medical examination designed to exclude all but picked men from employment underground, periodical examinations of workers, and the enforcement of measures improving working conditions had cut down the incidence of pneumonoconiosis considerably. But the industry was still faced with outstanding liabilities, in respect to miners who might be expected to develop the disease, which were variously estimated at £6,000,000 to £11,000,000.

In Great Britain, he said, the dust risks were shared among a number of industries in different parts of the country. Excluding coal-miners, some 35,000 workers were employed in the refractories industry, tin-mining, the pottery industry, metal grinding, sandstone working, sand-blasting, and other trades in which dust is a prominent feature. It had been common knowledge for years that these trades are dangerous, but the first scheme of compensation for silicosis only came into operation in 1919, and there could be no doubt that the industrial pulmonary diseases would bulk much more largely in our social and medical legislation in the near future. All dangerous dusts had one factor in common: they

all contained free silica, the dioxide of silicon, and the degree of harmfulness of a dust was generally held to depend upon the amount of free silica present in it.

Although the pulmonary disability induced by the different dusts had received various names, the terminal pathological condition was always the same; the victims died with advanced pulmonary tuberculosis. Pathologists were, therefore, confronted with two main problems: first, how does silica affect the lung, and how may its action be prevented or modified; and, secondly, how does it influence the development of pulmonary tuberculosis? In practice these problems were closely associated, but it was essential to make some attempt to separate them.

HOW DOES SILICA AFFECT THE LUNG?

The lung in uncomplicated silicosis presented a variable picture, but the characteristic feature consisted of the presence in the lung substance of isolated nodules of fibrous tissue, varying in size, number, and distribution. Massive fibrosis was rarely seen nowadays; usually tuberculosis supervened as a frank, possibly a modified, infection. Though in most forms of chronic fibrosis some reasonable account of the development and progress of the lesion could be given, the stages of the development of the pulmonary lesions in silicosis were not yet explained.

Until comparatively recently it was generally held that silicosis owed its harmful properties to its physical characters. The hard, sharp particles were supposed to damage the pulmonary tissue, and the whole process was regarded as a kind of microscopic trauma. For some years now, however, the view that silica becomes soluble in the tissues, and that its action is chemical rather than physical, had become generally accepted. It was also generally accepted that dust inhaled into the terminal alveoli was phagocytosed by the pulmonary macrophages and transported to various parts of the lung. Presumably the silica gradually became dissolved, and in its soluble state was able to stimulate the growth of fibrous tissue.

Experimental investigations had not, as yet, helped much in the elucidation of the process, and this was not for want of time or trouble. It was in the more complicated forms of the disease that experimental investigation was most needed. Silica in harmful dusts was always associated with other substances, and the way in which these adulterant dusts might modify the main process could only be studied experimentally. The statistics of certain dusty trades suggested that, although the workers are exposed to a high percentage of silica, they do not suffer from silicosis. It had often been stated that there is no silicosis in the mines of Mysore in India and in Cripple Creek in U.S.A., and the conclusion had been drawn that the adulterant dust in these regions prevents the accumulation of silica in the lungs. It emerged at the recent International Silicosis Conference in South Africa, however, that there is plenty of silicosis at Cripple Creek, and that as regards Mysore accurate information is lacking. Similarly, the low incidence of tuberculosis in coal-miners had been taken as an indication that no silicosis occurs among them, the anomaly again being explained on the assumption that the adulterant dust (in this case coal) removes silica from the lung. Prof. Kettle had not been able to demonstrate any difference from the normal in their reaction to the tubercle bacillus of animals saturated with carbon in attempts to block the reticulo-endothelial system. Dr. N. Tattersall had now shown that silicosis does occur in coal-miners—at any rate among the men who work at hard headings—and the so-called anthracosis of coal-miners was probably silicosis affecting an anthracotic lung. Moreover, Prof. E. L. Collis had pointed out that in certain districts the tuberculosis incidence was actually higher among coal-miners than in the general population. The demonstration of silicosis among coal-miners was of importance because a whole superstructure of theory had been built up on the assumption that it does not exist.

INTRATRACHEAL INJECTIONS.

During the last year, with Dr. R. Hilton, Prof. Kettle had attempted to produce silicosis by introducing suspensions of dust directly into the lungs of rabbits and guinea-pigs by intratracheal injection. So far they had not been able to produce the typical fibrosis, and since an adequate quantity of dust must have been introduced into the lung it was clear that the time factor is of the first importance. This had been recognised by L. U. Gardner, of the Trudeau Sanatorium at Saranac Lake, who had exposed his animals to dust for eight hours a day for two to three years, and had obtained important results. The intratracheal method had, however, enabled them to study the histology of lungs injected with carbon in the form of dilute Indian ink, and with mixtures of amorphous silica and carbon and mine dust and carbon. Prof. Kettle showed figures taken from the lung of a rabbit which received two intratracheal doses of dilute Indian ink at an interval of 58 days, and was killed 147 days after the last injection. Carbon particles were still present in the alveoli, and the appearances closely resemble those seen in figures from lungs of animals injected with the heavily pigmented South African mine dust. No sign of "cleansing" of the lung from carbon had been evident. He had no reason to believe that coal dust or any other adulterant dusts in industries played any specific part in protecting the individual from the effects of inhaled silica. The possibility that concomitant dusts might actually assist the action of silica must also be considered. Prof. Kettle had been privileged to examine the lungs of one of the cases of acute silicosis described in THE LANCET (Oct. 18th, p. 846), and also another fatal case from the same factory. He had found advanced tuberculosis in both cases, and this he regarded as the basis of the whole condition, though it was more than likely that the infection was enhanced by the inhaled silica. In dusting experiments he had not been able to demonstrate any difference between the changes produced by the inhalation of pure amorphous silica and the same dust mixed with sodium carbonate.

EFFECT OF SILICA ON PULMONARY TUBERCULOSIS.

Though inhaled silica might produce a fairly advanced fibrosis of the lung, the chief danger lay in the influence the dust exercised on microbic infection. There was abundant clinical evidence that silica had a specific action on the growth of the tubercle bacillus. It was formerly supposed that it was the fibrosis induced by the silica that in some way or another predisposed the lung to tuberculosis, presumably from interference with lymphatic drainage. In Prof. Kettle's view the fibrosis had no significance at all, and the only thing that mattered was the nature of the dust. No experiments had been carried out in this country on the infection of the fibrotic lung, but fairly extensive observations have been made on the effects exercised by silica on tuberculosis in laboratory animals. With W. E. Gye, Prof. Kettle had shown several years ago that inoculation of

different forms of silica produced characteristic necrotic lesions, and that tubercle bacilli proliferated readily in these lesions in such insusceptible animals as mice. Later, he had been able to show that the active growth of the bacilli did not depend merely on the necrosis of the tissue, but was due to the actual presence of the silica. He described in detail further recent experiments which confirmed this view. Gardner had performed an experiment which seemed to be crucial. At Saranac a very mild strain of tubercle bacilli, R 1, was cultivated, which produced in guinea-pigs infected by inhalation pulmonary lesions which healed in one to two years. When animals infected with this bacillus were dusted with quartz, massive ulcerative lesions occurred and the infection spread. This change was not due to an exaltation of the virulence of the bacilli, for subinoculations from the animals produced merely the form of tuberculosis characteristic of the R1 strain. It appeared to be due to an alteration of environment, dependent on the presence of the silica.

Exactly how the silica acts was still doubtful. Prof. Lyle Cummins had suggested that it destroyed complement; but to Prof. Kettle the phenomenon appeared to be a cellular rather than a humoral one. Either the intracellular defensive mechanism of the phagocyte was injured by the silica or the nutritional value of its cell protoplasm for the bacillus was enhanced. In vitro, when silica was added to culture media, the total growth of the bacillus seemed to be unaffected; but sometimes the lag period seemed to be shortened, so that an abundant growth was obtained much earlier than in control tubes. Prof. Kettle concluded by referring to the puzzling condition described by South African workers under the name of infective silicosis.

SECTION OF EPIDEMIOLOGY AND STATE MEDICINE.

AT the meeting of this Section held on Oct. 24th the presidential address was delivered by Prof. MAJOR GREENWOOD, who took as his subject

Professorial Conscience.

The professorial conscience, he said, might be at rest provided the professorial duties were efficiently performed, and he proposed to discuss the conditions of efficiency. He defined epidemiology as the study of disease imposed by focusing the attention, not upon the sick individual, but upon the group; a deliberate mental hypermetropia. As one of a medical family, he said, he was not likely to under-estimate the value of medical experience, which would save a man many statistical and epidemiological blunders. Nevertheless, an undergraduate training in medicine was very far from being an ideal preparation for the study of epidemiology. The majority of his pupils and junior colleagues during the last twenty years had not had a medical training and their work had not been inferior to that of the medical pupil. So far as the future of epidemiological research or teaching was concerned, it was a matter of relatively minor importance whether qualified doctors were attracted to this branch or not. Able young people with any sort of scientific education would do. In practice, however, the majority of pupils would continue to be medical graduates with all the virtues and vices of their training. On the virtues he need not enlarge—the schooling in exact observation of particular facts, the subduing of the most thumby fingers to the precise execution of delicate tasks—but he must emphasise the vices. As a class these graduates were as helpless as children in conducting an argument in general terms. While this was no doubt partly due to illiteracy, it was largely to be ascribed to the emphasis laid in medical teaching upon the practice of an art. Busy practical men gave admirable instruction in the ritual of sacrificing tonsils or appendices, but they could not be expected to enter largely into the question of whether the hecatombs of tonsils and appendices offered up year by year were a sacrifice pleasing to the gods of health. There was sound reason for this. Give a young man plain rules when to remove an appendix; make sure that he could operate—or telephone to somebody else who could—and the odds were that he would save some lives which would otherwise have been sacrificed. That he might as a set-off be manufacturing a number of incurable psychoneurotics was a remote consideration. He had not to strike the balance; the epidemiologist had, and had to explain to him that all epidemiological conclusions were based upon a weighing of probabilities. It was the duty of a teacher to inculcate in the epidemiological field the methods of a judge in equity. There was, however, a danger of changing the pupil from an irrational dogmatist into an ignorant sceptic. When the student had been convinced that much of what was believed and used as justification for acts of sanitary administration had no secure logical basis, it must be made equally clear that, while for all men conscious logical reasoning was the principal instrument and for most men the only trustworthy instrument of finding the truth, yet great men attained great truths by other means. It was right to expose the sham; it was wrong not to give equal prominence to the inimitable element. A lad who modelled himself on Simon's writings and neglected strict logic was in danger of becoming an uplifter; if he cultivated logic alone and sneered at uplift he was in danger of becoming a prig. Students should be taught social history showing why the statistical method, which confessedly ignored much truth, was an indispensable aid to study.

EDUCATION AND PUBLIC HEALTH.

The greatest enemy was time; when were the students to find time to reflect? The public health curriculum was overburdened and better educational results would be obtained if some specialisation were permitted. Education and technical instruction were muddled up in university education. Those who were to spend their lives in the public health service needed both, but the technical knowledge which was at once essential and capable of being learnt in a university school was not very extensive. Students were being taught more bacteriology, chemistry, and statistical epidemiology than would enable them to ask intelligent questions of experts, but not nearly enough to give them a real command of the technique. Most of what was taught had institutional value—as pure mental culture—or had no value at all. The primary duty of university teachers was institutional, not technical teaching, and the present legal requirements made it hard for them to perform that duty well.

The public health service attracted neither the able adventurer nor the budding scientist; it attracted those who were looking for something relatively safe in an insecure world. Hence its average student would be characterised neither by special natural ability nor by more than average scientific culture. Yet the scientific spirit was an essential of first-rate work in the public health service. Some men could be imbued with the scientific spirit in a bacteriological laboratory; others might make cultural progress if they were given time to read history or do sums for

themselves. Both groups might attain a fair measure of scientific culture if they were allowed to follow their natural bents, but they were not allowed to do so. All were stretched out alike on the Procrustes bed of curriculum. The law forbade the attainment of the ideal of education. An armchair reformer might propose as a remedy that quite a low minimum of technical knowledge should be established for the entrant to the public health service, and that, after a preliminary test of this kind, he should devote a year to studying one of the series of branches—e.g., (1) chemistry and physics, (2) bacteriology, (3) epidemiology and statistics, or (4) public administration. His final examination would be confined to the chosen group. In practice, if such a scheme came up for consideration, it would at once arouse conflict between eminent leaders of different groups, each of whom would have a set of facts in his own subject which he would be convinced every student ought to know. In the end the fine British spirit of compromise would, as usual, prevail and the examination would be much what it was now. Nor was any legal remedy possible, because the minority who really cared about education were utterly powerless. We were determined not to admit that the reason why there was no flood of highly educated persons, now that education was free to all, was simply due to the fact that the proportion of highly educable persons in the nation was extremely small. We dared not say that very little knowledge over and above what every medical student knew was enough to fit a man to be a mere hewer of wood and drawer of water in the public health service, while the qualities which fitted a man to rise much above that level were the undemocratic inborn privilege of less than one man in a thousand. The valid answer to this pessimism was that the one-in-a-thousand man was indeed the salt of the earth and that to encourage and foster him it was wise to permit much waste. When teachers and examiners were the same persons—if they were worthy of their office—even much worse regulations than those of the General Medical Council were not insuperable difficulties.

CONDITIONS FOR TEACHING.

The most serious difficulty of the present position was to determine what more could be done for the men who were the salt of the earth. We all knew that the intercourse between a young keen-minded man and an older man of ability was one of the most valuable and beautiful things in life; only when the solemn nonsense of professor and student was dropped and comrades were working side by side could the net of truth be woven. We all knew this, but—we were professors in a modern university. The report of the University Grants Committee quoted the words of an eminent man of science who had found himself reduced to the activities of a shop manager and was fain to point out the obvious and therefore wholly ignored fact that research was not a piece of knitting which could be dropped and picked up at odd moments. Very few men could do first-rate work amidst petty interruptions. Unless some via media could be found between scholarly insouciance and the present position, when the duties of the university professor were taken to be to sit in his private room with his window open for every ass in the metropolis to bray through, and, between listening to successive brays, to dictate letters to more distant asses, nothing but stark poverty would force men into university life. Some of the blame lay at the doors of the professors themselves, and a positive prohibition of any duties other than those of the chair itself—an absolute exclusion from international organisations and expert committees—might help the tender-minded. Unfortunately there was a lion in the path: over-capitalisation. Important people had to be convinced how busy and useful to them the professor and his staff were; they wanted results and had not the least interest in thinking for its own sake. Only along the lines of exceptional endowments, such as the Yarrow professorships, could the future of really first-class teaching be saved.

SECTION OF MEDICINE.

A MEETING of this Section was held on Oct. 28th, when the chair was taken by the President, Dr. R. A. YOUNG, and Dr. J. A. RYLE opened a discussion on

Research in Clinical Medicine.

He said that he presumed that the main motive for this debate was a prevailing sense of dissatisfaction with present achievements or conditions. It would be no exaggeration to say that all were alive to many disturbing and retrograde tendencies in modern medicine. Early specialisation, new physical and chemical methods, and commercial therapeutic enterprise had hampered the natural evolution of common observation and common sense, and fostered an uncritical attitude and an empiricism unworthy of the age. The time had come for a reawakening of interest in medical philosophy. Research in clinical medicine was not pathological, bacteriological, or biochemical research; it was rather a branch of the science of human biology which studied the behaviour of man in disease. Its methods were both observational and experimental. Great scientists, wherever possible, had employed both methods, but with the growth of the ancillary sciences of physiology and pathology there had been a tendency in medicine towards a division of labour. Scientifically, it had been the misfortune and not the fault of the physician that he had always had to expend a disproportionately large part of his energy in the treatment and management of patients. Nevertheless, some of the greatest contributions to physic had been due to practitioners of medicine. The days of the observational school were by no means numbered. The fields open to the observational physician were many and varied, while the scope of experiment must be limited by the dictates of humanity. The use of instruments of precision did not turn observation into experiment; the difference lay between studying casual experiments of nature and promoting small scale experiments of one's own. Just as the modern trend in animal biology was the study of behaviour, ecology, and genetics in the open, so the next trend in clinical medicine would be the study of behaviour, personality, idiosyncrasy, vital reactions, and genetic factors in living patients, with experimental inquiry running a coöperative parallel course in the hands of an expert few.

SCOPE AND OPPORTUNITIES.

The task of the clinical observer was not nearly ended. The wide realm of subjective symptomatology was still largely unexplored. More accurate information was needed about nausea, heartburn, the dyspnœas, and many varieties of ache in body and limb; about symptoms as expressing particular disturbances of function; and the influence of constitution on the incidence and course of chronic diseases. In therapeutics there was much to be done, but almost more to be undone. It should not have been necessary to wait a quarter of a century to discover by slow and bitter experience that the greater part of vaccine therapy was a delusion unworthy of a

scientific profession. It should be possible to decide in a comparatively short time what was good and what bad in serum treatment, chemotherapies, and endocrine preparations. The principles of prognosis should become more surely established, and in the realm of morbid psychology there was ample scope for further research. Moreover, many diseases of obscure causation were worth studying for their own sakes as natural phenomena.

It was undoubtedly true that provision and encouragement for the young clinical research worker were at present inadequate, but it was doubtful whether "curative" and "progressive" medicine could ever be divorced. No one could conduct research on patients not under his own care and no one could research on patients without treating them. It should, however, be possible to relieve a promising man of the necessity for private practice and of crippling routine, but there was no short cut to becoming a physician and the research worker could not profitably be relieved of his apprenticeship of out-patient work and ward teaching. Dr. Ryle would like to see an occasional vacancy for an additional assistant physician, to be filled only if a man of outstanding merit were forthcoming. The post should supply a general out-patient day, a few beds, access to all material in the hospital, and permission to see private patients referred by colleagues. The appointment should be for five years, renewable indefinitely or convertible to an ordinary honorary assistant physicianship, and the salary should be commensurate with that of junior professorial rank. The applicant should have held house appointments and a medical registrarship or tutorship, or have had a period in general practice or in some special institution. Credit should also be given for a broad education, particularly in philosophy or psychology, for qualities as a physician or naturalist, and for a scholarly heredity.

THE SYNERGISM OF LABORATORY AND CLINIC.

Prof. HENRY MOORE stressed the importance of the observational method, and said that clinicians, coming to think of disease in terms of physiology, had themselves introduced the more precise methods of the laboratory into the wards. Disease must be studied where it occurred—in the patient—by the man who handled disease, using all available means, laboratory and clinical; but complicated problems which could be solved by observation alone were calling more and more for close coöperation between the bench and the bedside. The key to the situation was the synergic working of laboratory and clinic as one unit; from collaboration of this kind had resulted many of the greatest discoveries of recent years, for instance the use of insulin in diabetes and of liver in anæmia. There was, however, a lack of facilities for work of this kind at present. The ideal hospital would be designed with four principles in view: (1) the treatment of patients; (2) efficient investigation of patients by all suitable means; (3) the teaching and training of students, post-graduates, and nurses; and (4) social service and after-study. The clinical research worker should hold a whole-time appointment, giving him security and leisure for thought, teaching, and research. He must guard against arrogance and against neglecting the art of medicine for science. Staff meetings, local medical societies, and the study of current literature should keep him out of a groove. He need not necessarily make his observations in the research clinic; he might have to work in the field or the general hospital. He must have training in the laboratory and in animal experiments, followed by simple research under suggestive rather than restrictive supervision. Whole-time investigators had contributed so much in recent years that their number must increase. The only justification for the part-time worker was to give a man in practice the opportunity to test a promising hypothesis; men who could do good work under these circumstances were few but should not be overlooked. Some organisation was needed at the present time to promote research in clinical medicine. Former participation in a piece of clinical research ought to be a consideration when appointments were being made.

LACK OF ENCOURAGEMENT IN GREAT BRITAIN.

Dr. HELEN MACKAY said that it had been alleged that clinical research workers in this country were taking a relatively small part in the advancement of knowledge. There was plenty of talent, but workers were discouraged by the absence of prospects of a livelihood, and the work was carried out largely by those who earned their living by other means. All clinical research must make heavy demands on the time, energy, and thoughts of the worker, yet scholarships and grants offered only a fraction of the minimum salary available in public health appointments. A small remuneration in early years would not matter if there were any prospects for the future, but all the subsidies were temporary. Stable salaried posts should be available for work in any institution, and the worker must have charge of hospital beds and out-patients so that he could control his material. He needed also the sympathy and assistance of his medical, nursing, and lay colleagues. Research in some hospitals was limited or impossible because of the attitude of the lay board. On the Continent there were many full-time salaried appointments in university clinics in small towns with ample laboratory and library facilities.

DISCUSSION.

Dr. PARKES WEBER questioned whether British medical workers set a real example in clinical research, and whether, until they did so, they had a right to ask the lay world for large donations. He instanced the multiplication of text-books, and the lack of monographs and of a microscopical museum analogous to a library. There was insufficient coöperation between clinicians and laboratory workers.

Dr. C. M. WILSON did not believe that men were prevented by the claims of practice from exercising creative ability. What was lacking was the fundamental training in physics and chemistry, and the remedy was the whole-time unit system. The numerous problems of clinical medicine demanded a precise answer, and for this reason many people believed that the future lay with the laboratory rather than with the clinician.

Dr. A. EIDINOW drew the distinction between original discovery and routine scientific investigation. The latter was valuable, but often done by men without medical qualifications, and the doctor who took it up must be prepared to give up his original profession and train as a laboratory worker. It was, however, of the utmost importance to design some scheme to help original discovery which should be open to anyone capable of it.

Prof. LEONARD FINDLAY declared himself unable to understand the attempt to distinguish between the research worker and the clinician. Laboratory work was still clinical medicine. The trained worker might do good routine investigation, but was not for that reason a suitable person for generous subsidy. A research worker, like a poet, was born, not made,

and there was a great deal yet to be seen if we had the men to see it. Much of the best research of the past had been done by men in general practice—for genius flourished with adversity—and these men made the most stimulating teachers.

Dr. G. W. THEOBALD urged the impossibility of doing research while rushing about London to appointments at various hospitals. The work was all done by whole-time workers. It was no use patching the system; it needed remaking. When England had first-class hospitals in small towns, on the Continental plan, research might begin.

Dr. KINGSTON BARTON emphasised the importance of treatment, and of the great progress of teaching hospitals during the last 50 years.

Dr. W. R. COLLIS said that every young man was faced with the problem of whether it was better to go into practice or go into debt. The clinician and the laboratory worker could no longer be divided. At present the man who spent any time in a laboratory was held by clinicians to be unfit to see a case, whilst the man who visited the out-patient department was viewed askance by his laboratory colleagues. Abroad, a man was expected to divide his time equally between the two branches, and development along these lines was essential for the future.

REVIEWS AND NOTICES OF BOOKS

Problems and Methods of Research in Protozoology.

By Various Contributors. Edited by ROBERT HEGNER, Professor of Protozoology, and JUSTON ANDREWS, Associate in Protozoology in the Johns Hopkins University School of Hygiene and Public Health. London: Macmillan and Co., Ltd. 1930. Pp. 532. 21*s*.

IN the period following the late war the study of parasitic protozoa has attracted increasing numbers of investigators in America. Many of these have contributed materially to our knowledge, have introduced new methods of investigation, and have entered hitherto unexplored fields. Their results and technique have been published in widely scattered journals, so that it has not always been an easy matter for workers in other countries to obtain the desired information.

In this book the editors, who are amongst the foremost workers in this subject in the American schools, have presented to readers a series of articles by eminent American protozoologists, each one a specialist in his own line. The authors have been well chosen and have given clear and concise accounts of the present position of the particular aspects of the subject on which they write. Their own results are described, as also their methods of investigation and the problems which still await solution. Since the book deals mostly with the work of American investigators, the title is misleading, for subjects not studied by the authors receive little or no attention, though they are amongst the most important. Thus the great problem of human and animal trypanosomiasis, apart from that of rats, is not considered. Similarly piroplasmosis, leishmaniasis, and other subjects are omitted entirely or receive only a cursory mention. But the book contains a vast amount of very valuable and useful information, which it would be difficult to obtain elsewhere, on problems and methods of research in those branches of protozoology which have been studied by American investigators. B. D. Reynolds has given a very important account of ectoparasitic protozoa and this alone will be of the greatest service to those who wish to study these organisms. H. Kirby's account of the intestinal protozoa of termites, J. F. Kessel's chapter on the methods and problems of cross-infection experiments, H. Ratcliffe's on the effect of changes in diet on intestinal protozoa, C. F. Craig's on the cultivation of *Entamœba histolytica* and serological studies with this parasite, M. M. Metcalf's on the Opalinidæ, F. O. Holmes's on the protozoa of latex plants, J. Andrews' on the coccidiosis of birds and mammals, R. R. Kudo's on the myxosporidia and microsporidia, W. H. Taliaferro's on serological methods, and finally L. J. Reed's on statistical matters are most instructive and valuable contributions. As a connecting link between groups of articles the first of the editors has written introductory chapters which do much to blend the material presented. The problems which await solution are detailed. This method of approach reaches its climax in the article on bird malaria where a series of 76 specific problems is listed. It would have been quite easy to multiply this number by ten, but the most striking feature of the list is that it could have been made applicable to any infection, whether animal or vegetable, and is not peculiar to malaria.

Those who wish to obtain an insight into the methods and results of American protozoologists will get it from this book.

The Urticarias.

By EDOUARD JOLTRAIN, Director of Clinical Research at the Paris Cochin Hospital. Paris: Gaston Doin et Cie. 1930. Pp. 417. Fr.40.

THE author's preface of 49 pages, which is reproduced verbatim from an address delivered in 1929 at Madrid in honour of his chief, the late Prof. Fernand Widal, concerns itself with the life and work of that great master, and dedicates the book to his memory. A brief introduction of the subject, which is recognised to be of ever-increasing importance, is followed by a description of the histology and of the clinical varieties of the urticarial syndrome. The common evanescent and figurate type, the papular, vesicular, tubercular, hæmorrhagic, and bullous types, strophulus or lichen urticatus, urticaria pigmentosa, giant urticaria or Quincke's œdema, pseudophlegmonous and gangrenous varieties—all these are grouped together and separately described from the clinical aspect. Interesting as such a morphological classification will always be, Dr. Joltrain contends that it is of much greater importance to elucidate the causes which underlie these clinical manifestations, and he examines the position mainly from this point of view.

A historical résumé of the classic contributions of Widal, Abrami, Brissaud, and Joltrain on the mechanism of anaphylactic shock, and its concomitant manifestations in the blood (hæmoclastic crises), the blood pressure, the temperature, blood coagulability and albuminuria, is exceedingly well compiled and lucidly explained, and forms an admirable introduction to this long clinical study of the various forms of the disease. The classification of the many ascertained causes of the syndrome, based on

the modern theory of sensibilisation, include, first of all, protein antigens absorbed from the commoner articles of our daily diet. Fish, eggs, milk, chocolate, bread, farinaceous and other foods, beer, wines, &c., find a place in the list, and examples of such susceptibilities are freely quoted. Other substances discussed are drugs, such as antipyrin, opiates, arsenic, mercury and bismuth, cod-liver oil (not so infrequent since this drug began to be used in the treatment of varicose veins), veronal and insulin, and, lastly, dust inhalations and microbic foci which, according to this author, are rarely the cause of urticarial symptoms. Urticaria a frigore and the conditions due to solar and actinic rays of various types are also dealt with. Fatigue and emotional disturbances, which every physician recognises as at least a predisposing factor in the individual attacks, receive ample consideration; and, finally, there is a most welcome chapter on treatment, for urticaria can tax our therapeutic resources to breaking point.

It was a sound idea to summarise modern conceptions of urticaria in this way—the subject certainly deserves the labour that has been expended. The only point on which the work can be criticised is the complete omission of the discoveries of Sir Thomas Lewis on the local mechanisms involved in the characteristic manifestations. His name does not even appear in the large bibliography of 35 pages which precedes the index. The omission is really serious in a text-book of so extensive a character, and in a subject which Lewis has done so much to clarify.

Chronic Nasal Sinusitis

and its Relation to General Medicine.

By PATRICK WATSON-WILLIAMS, Consulting Surgeon in Diseases of the Ear, Nose, and Throat, Bristol Royal Infirmary. Bristol: John Wright and Sons, Ltd. 1930. Pp. 221. 15*s*.

IN this book Dr. Watson-Williams discusses the systemic effects of nasal sinus infections. He is not here concerned with acute sinusitis nor even largely with profuse chronic suppuration, but deals especially with those "low-grade" infections which produce little local disturbance and are often difficult to detect, but which may, and do, cause severe disease from toxæmia and from the metastasis or spread of organisms to various parts of the body. There is of necessity some overlapping in a discussion of this subject, for such "focal sepsis" may have its origin in other regions beside the nasal sinuses, for instance, in the teeth, the gastro-intestinal or the genito-urinary tract; on the other hand, some of the effects described are not due so much to focal sepsis as to direct extension of the inflammation, as in some orbital and ocular affections.

The first part of the book deals with the general aspects of focal sepsis and contains some interesting paragraphs on the selective affinity of certain organisms and their toxins for particular organs, which may help to explain the very various symptoms of sepsis in individual cases. The author next discusses the effects of focal sepsis on the different parts of the body; this section includes some remarkable observations on the relation of chronic septic infection to insanity, a subject which has attracted increased attention during the last few years. Numerous clinical records are recounted in this part of the book. In the chapter on orbito-ocular complications we would have welcomed a more precise statement as to what diseases of the eye may be produced by focal sepsis and in what proportion of cases, for instance, is retrobulbar neuritis likely to be due to nasal sinusitis. Dr. Watson-Williams reports cases of this disease which have recovered after exploring the sphenoidal sinus, a circumstance by now very well known, but does not explain that many cases recover either spontaneously or after exploration of an apparently healthy sinus, or after removal of part of a middle turbinal. It is thus possible that the local blood-letting acts beneficially, or that a particular patient would have recovered without any intervention. This criticism may be extended to the chapters on other regions. It is by now generally recognised that the nasal sinuses are a source of focal sepsis, and attention might be more profitably directed to considering the relative extent of their influence, and of other sources of sepsis, on the diseases of various organs.

The second part of the book is concerned with methods of diagnosis and treatment. The author finds the endorhinoscope of great value in disclosing appearances suspicious of sinusitis, especially in latent cases where the secretion and other signs of inflammation are very scanty. But his chief diagnostic weapon is the valuable method of "exploral suction" which he introduced many years ago, by which the secretion from a suspected sinus is sucked into a syringe for bacteriological and cytological examination. A remarkable statement is that many of these low-grade but chronic inflammations of a nasal sinus can be cured by a single "disinfection" or washing out with an antiseptic, such as 1/10,000 biniodide of mercury.

The aim of the book is to fill a clinically important gap between the general text-books of medicine, which devote little space to diseases of the nose, and the books on rhino-laryngology, in which the systemic effects of nasal sinus infections receive but scanty mention; it will be of interest to the general physician as well as to the laryngologist.

Les hypotensions aiguës et subaiguës.

By M. A. DUMAS, Médicin des Hôpitaux, Professeur Agrégé à la Faculté de Médecine de Lyon. Paris: Masson et Cie. Pp. 163. Fr. 30.

THIS small book deals very completely with a subject which, although a most important one, has been pushed into the background by its more spectacular opposite hypertension. The author presents hypotension as a clinical entity and as a symptom in the course of another disease when this demands immediate treatment as soon as it is recognised. A clear and helpful distinction is drawn between acute, subacute, and chronic hypotension. It is shown that these three states are entirely different, pathologically, ætiologically, and clinically, and, more important still, that each requires different forms of treatment. Another interesting division is made according to whether the hypotension is cardiac in origin, as with the low pressure associated with cardiac infarction, or whether it is vascular in origin, as in conditions of shock or intense pain; with the recognition of these two distinct sources the treatment again differs fundamentally. In the section devoted to the study of hypotension as a symptom in the course of another disease, we are given, in explanation of certain untoward events which may happen in the course of an illness, and of the treatment adopted empirically for their alleviation.

The section on treatment of hypotension as a whole is inadequate, but the book will, however, be read with interest by those who are not sufficiently familiar with the condition to recognise the varied guises in which it may manifest itself.

PANEL AND CONTRACT PRACTICE

THE PANEL CONFERENCE.

THE representatives of the Local Medical and Panel Committees met in London, at the British Medical Association House, on Oct. 23rd. Dr. H. J. CARDALE took the chair for the first time.

Certification in Pregnancy.

Last year the Insurance Acts Committee (I.A.C.) was asked by the Conference to consider the suggestion that it should be lawful for a medical practitioner to give a certificate to a woman when he considered her so far advanced in pregnancy as to be unfit for her employment, and that such a certificate should be sufficient warrant for the payment of insurance benefit until the end of pregnancy. It was also suggested that a special certificate should be introduced for this purpose. The I.A.C. had found it impossible to support these proposals; in moving the adoption of the paragraphs of the report which dealt with these points, Dr. H. G. DAIN, chairman of the I.A.C., said that the Committee was convinced that it was not in the best interests of the service to proceed with these suggestions. An amendment was brought in, however, by Dr. W. STEVEN for the West Riding of Yorkshire, stating that a woman who had reached the eighth month of pregnancy was bodily disabled, and requiring that the panel practitioner should supply her with a certificate to that effect at the end of the seventh month. In Yorkshire, he said, a large proportion of the women worked in factories, and might be seen late in pregnancy lifting heavy bales of wool. There was no uniformity in the treatment of these women by their societies; the larger societies sent a woman to the regional medical officer as soon as she was certified, while the smaller societies often met the claim at once without question. There was also a want of uniformity among the doctors, some giving certificates as early as the fifth month, and some declaring the woman unfit, not owing to pregnancy, but owing to some symptom, such as varicose veins; as a result the second woman might receive benefit at the fifth month or earlier, and the other be refused it on the grounds that it was too early in her pregnancy. Though it was not always possible to say definitely when the eighth month had arrived, it should not be difficult to keep within a margin of error up to about three weeks; a second certificate should be supplied if necessary.

Dr. J. S. MANSON, for Warrington, still considered that a special certificate would be useful, as the condition was not one of illness, and its certification under another heading would help to reduce the inflated sick benefit claims of the last few years. Dr. Dain said that the patient was entitled to sickness benefit on the grounds of incapacity for work, and the proposed plan would limit her to one month's benefit only during pregnancy; this was unreasonable. Each case must be decided on its merits, every factor, including the nature of the work, being taken into consideration. The approved society undertook the final responsibility of deciding whether the patient was unfit for work or not; under the proposed plan, if the patient developed pneumonia she might exhaust all the benefit to which she was entitled at the beginning of pregnancy. The amendment was not passed, but the paragraphs embodying the opinion of the I.A.C. were adopted.

CHANGE OF DOCTOR.

The principle of free choice of doctor, in panel as in private practice, was the subject of a resolution submitted by the Conference to the Minister of Health some years ago. The report of the I.A.C., in the paragraphs referring to change of doctor, gave a brief review of the regulations which have obtained at different times since the passing of the National Health Insurance Act; from 1913 to 1919 an insured person could only change his doctor once a year, at the end of December; from 1920 to 1923 he could change half-yearly; from 1924 to September, 1927, at any time; and from October, 1927, until the present, at any time upon giving a fortnight's notice, unless both the doctors concerned agreed to an immediate transfer. Dr. DAIN, speaking on this point, submitted to the Conference a letter dated Oct. 18th, 1930, from the Ministry of Health; in this was quoted a resolution requesting the adoption of a quarterly method of transfer, recently placed before the Minister by a conference of the approved societies and friendly societies. The Minister, Dr. Dain said, hoped that the Panel Conference and the I.A.C. would be able to concur in the suggested amendment of the regulations, and it was therefore necessary to consider the position again very carefully. He proposed that the Minister should be asked to refer the whole question for a year. The reason the change had been suggested was because of the great increase in sickness benefit during the last five years, which had been attributed in part to lax certification; it had been said that when the patient could change at a moment's notice his doctor dared not refuse certificates. There was evidence, however, that the increase in sickness benefit was due to an abnormal experience of non-fatal sickness of an incapacitating nature spread over several years. This wave had reached its crest in February of last year, since when there had been a decline. There were good grounds for asking that there should be no change for another year, until it was seen whether further events would bear out this experience. It was against the interests of both patient and doctor that such a change should be made.

Dr. G. F. WHYTE, for Dundee, introduced an amendment suggesting that there should be a return to the half-yearly system, on the grounds that it was more satisfactory from an administrative point of view; at present there was an interminable process of note-writing and postage, which was extremely cumbersome. The resolution put before the Minister by the friendly and approved societies contained a provision for immediate transfer of patients if they were able to show legitimate reason for the change; he considered that this provision should not be included in any change of scheme; the right of transfer by consent only should be required. In the Dundee area during 1922, when the half-yearly system was in force, there had been approximately 1000 changes; during 1927, when the change could be made at any time, the number made was 5000; in 1929, under the present system, there had been about 2000. He agreed with the principle of free choice, but the patient had no right to grumble if he could change at the half year, and had the right of transfer by consent of his doctor at any time. Dr. J. MCNAMARA, for Nottinghamshire, was also opposed to the provision in the resolution of the approved and friendly societies to which Dr. Whyte had taken exception; his

constituents supported the Dundee amendment. Dr. J. W. BONE, for Bedfordshire, was heartily opposed to a return to the half-yearly system. The approved societies, he said, desired the change because it meant a simplification of administration; and because it was hoped that if it was more difficult to change doctors there would be a reduction in lax certification, and hence in sickness benefit. These opinions were no concern of the medical profession, and though the Minister might impose the change on the profession, he should not receive its support. He would prefer to see the patient at liberty to transfer at any time, but if he were sent automatically to a medical referee on making the change there would be no danger that he would seek a more amenable doctor on being refused a certificate.

The Conference did not support Dundee, and, swinging the pendulum in the opposite direction, an amendment was introduced by Carmarthenshire, recommending a reversion to the regulations of 1924 to 1927, when a patient could make a fresh choice of doctor at any time. Dr. BONE pointed out that it would be uncommonly awkward for the I.A.C., having received one proposition for consideration from the Ministry of Health, to be forced to reply with a suggestion which was the exact reverse. An appeal to the Conference to support the view of the I.A.C. was made by Dr. H. B. BRACKENBURY; the Minister of Health, he reminded members, could still impose the change immediately if he wished, but the Conference was at liberty to ask him to postpone action for some months. There were two reasons why transfer at fixed periods, with notice, was a bad thing: first, because it was against the principle of the medical profession requiring the free choice of doctor and patient; and secondly, because it would fail to have the desired effect; the change of system was not directed against lax certification, if that existed, but against the doctor's fear of losing his patient by transfer. There was no reason to suppose that a doctor would be any happier at losing his patient at the end of the quarter than at the end of 14 days. But although most members would prefer that the patient should be at liberty to change at a moment's notice, it was not a suitable time to introduce a resolution on the point to the Ministry, and he asked the Conference to support the proposal of the I.A.C. After a little more discussion the meeting passed to the next business, which was a motion introduced by Dr. H. N. BARON, for East Suffolk, to the effect that the regulations for change of doctor from approved institutions should be the same as those which apply in the case of change from one doctor to another. The general opinion among speakers, however, was that these institutions were dying out, and that it was unnecessary to take any decided step in the matter. Dr. DAIN said that as they were run by lay committees they had the right of canvassing for patients, while the practitioners in the neighbourhood had no fair means of combating this. As there were only eight or nine such institutions in England it was not worth while to run the risk of stirring up ill-feeling. The Conference rejected the motion, but upheld the proposal of Dr. Dain that the Minister should be asked to defer for 12 months the consideration of any modification of the regulations for the change of doctor.

Preparations not Ordinarily Regarded as Medicines.

Dr. DAIN moved the approval of the part of the report of the I.A.C. dealing with the draft articles issued from the Ministry of Health on the definition of drugs. The advisory committee appointed by the Minister have included in their second report a list of substances which they have classified as "never drugs," "sometimes drugs," and "always drugs," but there is nothing mandatory in this classification. Should any substance come into question the case may be referred to the panel committee; should the findings of the panel committee not be accepted, either by the practitioner, the pharmaceutical committee, or the advisory committee, the question can be referred for decision to referees nominated by the Minister, of whom at least one shall be a medical practitioner. If it is finally decided that the substance is not a drug, the cost can be reclaimed from the practitioner who prescribed it. Dr. D. O. TWINING, for Devonshire, proposed that no practitioner should be liable to be surcharged with the cost of a substance before an official decision had been reached as to the category to which it belonged. It was unjust, he considered, that the practitioner should be penalised to the extent of paying for the preparation, when the committee whose business it was to draw up a schedule were themselves undecided into which class it fell. Dr. H. C. JONAS supported him, but Dr. DAIN considered that the point was too small to justify any attempt to change the regulations; according to his estimate, it might cost one practitioner out of those present the sum of sixpence once in ten years. The chemist also deserved consideration; he was not allowed to refuse to supply any preparation prescribed by the doctor, but it would be unjust to insist on this, while warning him that in the case of any doubtful substance he would be unable to recover the cost if it was decided that it was not a drug. If the chemist accepted the responsibility of supplying the drugs the doctor must accept the responsibility of ordering them. The amendment was lost and the paragraphs in the report adopted.

A motion not on the agenda was introduced by Dr. PEARSON, for Birkenhead, suggesting that when a practitioner had been reported to the Ministry on a question of prescribing, he should know in what form he was reported, and should receive a written reply stating whether his explanations had been satisfactory. Dr. DAIN said that practitioners were already supposed to receive this information; Dr. PEARSON, however, had encountered a case where no official intimation was received, and his motion was carried. The paragraphs on doubtful drugs in the report of the I.A.C. were then approved by the Conference.

Additional Benefits.

Dr. E. R. FOTHERGILL, for Brighton, moved that the fullest opportunity should be given for the consideration of all regulations and proposals having reference to additional treatment benefits before their final adoption. There was bound, he said, to be a great development of such benefits in future, and he thought the I.A.C. should not be allowed to disintegrate, but should persist as a supervisory committee to consider anything done under the Insurance Act. Consultants were innocent persons and apt to fall into pitfalls when dealing with the approved societies; if additional services were to develop, any regulations made between the consultants responsible for those services and the approved societies should be criticised by the I.A.C. in the interests of the panel practitioner. Dr. BRACKENBURY agreed with the spirit of this motion, but was doubtful of the form; the I.A.C. had made arrangements for an additional benefits subcommittee, largely composed

of consultants, and there would be opportunities for the consideration of rules and regulations by both the committee and the subcommittee. Some alteration in the constitution of the Conference must be contemplated if specialists and consultants were to have the opportunity of voicing their view. The Conference felt with Dr. Fothergill, however, that it was unnecessary to face the problem for the moment, and the motion was passed.

Dr. J. O. SUMMERHAYES, for East Sussex, seemed to have suffered from the disappearance of his patients for months at a time into sanatoriums, rheumatic clinics, and other haunts of special forms of treatment; subsequently they returned to him without bringing any official information on what treatment they had received there, or what course of life it was now advisable for them to follow. He was not, therefore, felt to be unreasonable when he suggested that the rules of ethics of consultation, as adopted by the British Medical Association, should be made to apply to all questions having reference to treatment additional benefits. The panel practitioner, he said, was like the donkey in the East—grossly overloaded. But there was one Eastern donkey who had turned, and that was Balaam's ass; he had not only refused to go any further, but had taken the occasion to speak pretty plainly to his master. It was time the panel practitioners followed his example, and addressed the Ministry of Health on this matter. Dr. DAIN quite agreed that a report should always be furnished to the practitioner, but he thought some form of report would also be necessary for those who were paying for the treatment of the patient; the rules of ethics of consultation would require revision as they did not cover this second point. Dr. Summerhayes' motion was carried.

Treatment of Insured Persons in Hospitals.

The question of the admission of patients to hospital wards under the care of their private practitioner was introduced by Dr. L. G. GLOVER, who proposed that the I.A.C. should take such action for the furtherance of this object as might be necessary. The body of opinion among members of the Conference was strongly in favour of the allocation of hospital beds to panel practitioners for the treatment of their patients; Sir RICHARD LUCE said that the best opening lay in the smaller hospitals and possibly in the council hospitals under the Local Government Act, but that the only way in which an entrance could be gained was by bringing local opinion to bear. Dr. GLOVER pointed out that if a footing was to be secured in the council hospitals the effort must be made this year, before any particular plan had been adopted by the local authorities. Dr. H. S. BEADLES and Dr. H. C. CRAVEN VEITCH feared that if doctors followed their panel patients into hospital voluntarily it would in time become an obligatory part of their duties, while Dr. I. G. MODLIN disapproved, on principle, of any man doing work for the State or for a municipality without being paid for it. All other speakers, however, were heartily in favour of the motion, which was carried, though the particular line which the I.A.C. was to follow in furthering this object was not made very clear.

Range of Service.

Dr. FOTHERGILL last year introduced a motion laying it down that when it has been decided that an operation or other service is outside the scope of a practitioner's obligation it is no concern of any committee or authority to decide that the practitioner who renders the service has appropriate skill or experience; this year he returned to the charge, and asked why, since the motion had been passed, the I.A.C. had not taken the necessary steps to have the regulations amended. Dr. BRACKENBURY replied that almost all the members of the I.A.C. had agreed that it was impossible to introduce this statement to the Ministry. If a doctor considered a particular service was outside his contract he could decline to perform it, and his decision would be considered by the proper tribunal later. If, however, he undertook to perform it for a fee as a specialist service, he must be able to prove himself a specialist in respect of that service. Dr. JONAS supported Dr. Fothergill on the grounds that once a service was recognised as being outside the panel contract it was outside the purview of the Ministry; but Dr. DAIN pointed out that decision lay, not with the Ministry, but with the representatives of the panel practitioners. It was not desirable to limit service to the smallest amount that any one practitioner was competent to do; the aim was to provide a full general practitioner service. He quoted the case of a doctor who purchased an ultra-violet ray lamp, and wished to give specialist service and charge fees; the I.A.C. had been able to insist that he should take a course in the subject before he could regard himself as a specialist in it. Dr. Fothergill's arguments were not accepted by the Conference.

Dependants of Insured Persons.

Dr. DAIN, for the I.A.C., moved:—

"That the time is now ripe for the medical profession to ask for the inclusion under the National Health Insurance service of the dependants of insured persons, provided that such an extended service include adequate safeguards respecting remuneration and conditions of service."

He wished to explain why the I.A.C. felt it to be a suitable moment to suggest a scheme which must lead to the expenditure of much public money. The passing of the Local Government Act pointed to a wide public demand for a complete medical service; the medical profession would be called upon to help to decide whether the extension should be by means of specialist services given at clinics and welfare centres, or by an extension of general practice. It was the opinion of the profession that the public would receive better service from the family doctor, and the Committee had decided that the time had now come to press for the inclusion of dependants. Other countries were not all taking this line; in parts of the United States there were no general practitioners. If the opinion of the Conference was in favour of a general practitioner service they must press forward now, or the population would divide its allegiance between the clinics and the doctors. It did not make for efficiency to have different branches of the doctors' work absorbed elsewhere.

Dr. J. D. WELLS, for Essex, thought the I.A.C. was trying to rush fences. The time was not yet ripe for the inclusion of dependants, because the service given under the National Health Insurance Act had not yet reached the standard originally promised. To ask for an extension, moreover, implied that the profession was perfectly satisfied with the present terms of service, which was not the case. Dr. L. J. PICTON, for Cheshire, supported him; if the extension were made, he thought, the doctors would be overwhelmed with work, and an increase in personnel would be necessary which it would take time to supply. In the meantime there would be dissatisfaction among the patients, and appeals to the approved societies to find some other means of providing attendance—perhaps by a State medical

service. Dr. C. W. SOMERVILLE said that he had seen extreme suffering among the wives and children of miners, and that in Midlothian they had felt the time was ripe for this step for the past 16 years. To practitioners it would mean the end of many bad debts. The friendly relations between doctor and patient were, in the opinion of Dr. W. HAIG, bound to disappear if a State medical service ever came into being.

Dr. PETER MACDONALD thought that this was the most important subject before the Conference. In York, panel practitioners were not in favour of the inclusion of dependants because of the increased work involved, and because they considered that the need was met in other ways—namely, by clinics—in their area. Dr. J. G. MCCUTCHEON said that when the transference of powers to the local authorities took place in Scotland, much perturbation was occasioned in one area because a whole-time medical officer was appointed to look after the dependants of those who could not afford to pay for medical services. He, personally, now saw less than one twenty-fifth of the cases of sick children that he had seen on first going into practice; a practitioner's work was bound to deteriorate if robbed of regular experience. In the opinion of Dr. A. W. HOLTHUSEN, the rush of work at the outset of a scheme to include dependants would quickly settle down to a steady level.

Dr. BRACKENBURY reminded the meeting that this motion had been passed by the Representative Body at the annual meeting, and said that it was important that it should now go forward as the opinion of the whole body of panel practitioners. He called attention to the wording of the motion, which did not say "the time is now ripe for the inclusion . . . ," but "the time is now ripe to ask for the inclusion . . ." Obviously the change could not be made in a moment, but it was important that the profession should make a statement of opinion now. Otherwise a different method—presumably a State medical service—might be adopted. Dr. SUMMERHAYES pointed out that more work would mean more pay, and considered that the early congestion of work would settle down in time. Dr. J. A. PRIDHAM was able to foresee other advantages; the tiring and often fruitless task of sending out small accounts would be avoided. Moreover, the doctor would be in a better position to prevent disease, because he would see it in the early stages. Chronic otorrhœa might be prevented by timely incision of the drum. The good effects of preventive measures would react throughout his practice, because the children he attended now would be the insurance patients of the future. Whoever brought forward this suggestion at the present time would receive the credit for it, and he would like to see that credit come to the medical profession. The motion was carried with only ten dissentient votes.

A Direct Attack.

Dr. C. C. MORGAN, for Chester, drew attention to certain headlines which appeared in the *Manchester Guardian* of Sept. 29th, and which quoted from a speaker at the National Conference of Friendly Societies, who referred to the "inefficiency of panel doctors." This speaker, who was the president of that conference, stated that "there are too large a number of medical practitioners whose treatment of insured persons is perfunctory and negligent, and some who are willing to do almost anything in order that they may secure a cheap popularity, and a long Panel List, even to the extent of assisting persons to obtain benefit to which they are not justly entitled." Dr. Morgan said that this constituted a direct attack on the profession as a whole, and that slanderous accusations of the kind did an incalculable amount of harm. It was the doctor's business to decide whether the patient was fit for work or not. He moved that the Conference should express strong resentment of the slanderous statements concerning panel practitioners made at the annual meeting of the National Conference of Friendly Societies.

Dr. DAIN said that the medical profession had been made the scapegoat for the increase of sickness benefit. Statements of the kind quoted were based on false deductions. There was an average limit to the duration of illness, and often a patient would recover in the interval between being referred and the occasion of his appearance before the regional medical officer. It had been estimated that the panel doctor's decision was actually reversed in only 16 per cent. of cases. The profession had always stood for improvements in the service, and it was unfortunate that such people as Dr. Graham Little and Lord Riddell should make statements without actual basis in fact. The service given to the panel patient was the best type of general practitioner medical service in the world, though there was little opportunity to say this publicly or in the press. He did not know whether the motion brought forward by Chester was the best form in which to couch a protest. Dr. E. K. LE FLEMING did not think the Chester motion, as it stood, would enhance the dignity of the Conference; he thought that practitioners should take every opportunity in public and in private to put forward sound reason against such attacks. At his suggestion the Conference proceeded to the next business.

Statistics.

Dr. DAIN spoke on the importance of amassing reliable statistics of National Health Insurance practice during the coming years; as their greatest value would lie in continuity, an amendment was withdrawn which suggested that any area which furnished 100 per cent. quota of statistics should be exempt from producing any more for a period of two years.

Dr. H. J. CARDALE was the only nominee for the position of chairman in the coming year.

SCARCITY OF HOUSE SURGEONS.—At a court of governors of the North Devon Infirmary at Barnstaple recently it was stated that additional expense had been incurred by the necessity of obtaining a locum tenens to do the work of house surgeon. It was added that "the young medical men who used to come forward to fill the positions of house surgeons in provincial hospitals come no more."

MERSEYSIDE HOSPITALS COUNCIL.—The second annual report of this council records substantial progress. The number of members of the contributory fund is 245,000, and the income is £140,000. The estimated revenue for 1929 was £100,550, and the amount received £124,151. At the close of 1928 there were 153,142 contributors. A year later this number had gone up to 217,393, employed in 3178 establishments. A sum of £91,506 was distributed to voluntary medical institutions of which £3100 was earmarked for medical staff funds. A grant of £1968 was made to the Radium Fund, and £1784 was spent on the new ambulance service. A sum of £24,198 was paid to poor-law and unassociated hospitals for services rendered to contributors to the fund, and the work of the convalescent and after-care department was extended in coöperation with some of the approved societies. It is, however, pointed out that although the penny-in-the-pound scheme has been so successful, it does not meet the cost of services to contributors.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 1, 1930.

HEALTH INSURANCE OF DEPENDANTS.

THE representative body of the British Medical Association agreed in July with a resolution of its executive council that the time is now ripe to ask for the inclusion of the dependants of insured persons under the national health insurance scheme. In many industrial areas there is little or no private practice among these dependants, they simply attend clinics and hospitals; only by their inclusion in a national scheme can they be brought under the care of the general practitioner. The cost of such extension of the insurance scheme was estimated by the Royal Commission of 1926 at £9,500,000, but as has been pointed out in the Association's proposals for a general medical service for the nation (p. 42) there are considerable set-offs to this cost, for money would be saved on existing maternity and child welfare services, and on the medical and dental treatment of school-children—a fact which was clearly recognised at the recent annual conference of health insurance committees.[1] Whether the panel doctor will welcome the enormous addition to his responsibilities which the care of dependants will imply is a ruling factor in the decision.

The answer to this question was given last week at the panel conference, a report of which appears on another page. Given adequate safeguards in respect of payment and conditions of service all but ten of the 200 odd representatives pledged the willingness of their local medical and panel committees to work such a scheme whatever its implications. That it will in fact add enormously to the responsibilities of general practice was emphasised at the conference by a representative of Cheshire. Fewer students are entering the profession of medicine of late years, and it is conceivable, he said, that there might be a definite lack of qualified practitioners to undertake the work at the outset. He was pessimistic enough to assume that the service rendered would be so inadequate that the approved societies would appeal for a full-time state medical service as an alternative; his fear was not generally shared however, though other objections to the motion were raised. In York even the threat of a State medical service seems to produce no terrors; practitioners there are apparently content that dependants of insured persons should either come to them as private patients, or that they should attend the municipal clinics—but this view is exceptional. There was a widespread feeling evident at the conference that a complete medical service was inevitable in some form and that medical men, both for the advantage of the patient and in the interest of the profession, should be the first to instigate a practicable system, and to receive any credit that might arise. The courage of those who were anxious for a compromise was restored by the chairman of the B.M.A. Council who pointed out that to ask for the inclusion of dependants was not necessarily to be given it, and that in any case the change could not occur in the twinkling of an eye. A representative of Essex was among the unconvinced, and had there been no threat of State-controlled medicine to consider, his arguments might have carried much weight; the present insurance service, he said, had not yet reached the standard contemplated when the first Act was passed, and it would, he thought, be better to do one thing well before undertaking any fresh responsibility. To ask for an extension was to give the unfortunate impression that the present terms of service were satisfactory to panel practitioners.

Speakers from areas of industrial depression had seen enough suffering among women and children to convince them that the time had already come for an extension of the insurance scheme to include them; and other delegates, though they admitted that there would probably be an excess of work for practitioners at the outset, felt that it would not be long before this settled down to a steady rate. More work, it was sagely remarked, would in any case receive the compensation of more pay. Other advantages were visualised as a result of the change. The representative of Dorset mentioned the valuable opportunities for practising preventive medicine which might arise if patients were seen early. Cases of otitis media, he said, seen in the early stages when the drum could be incised, would be cured before they developed into the chronic type of otorrhœa which wasted so much of a practitioner's time. Eventually preventive measures such as this would react on the whole of his work, because the children treated now would become the insured persons of the future. The chief reason for the introduction of the question at the present time was stated by the chairman of the Insurance Acts Committee when he said that the passing of the Local Government Act was a sign of the public demand for a complete medical service; it was the opinion of the medical profession that such a service could be given best by the family doctor rather than by an extension of clinics and welfare centres. In some parts of the United States, it would appear, the general practitioner is almost extinct. As an illustration the case was quoted of an American patient with gastric ulcer who had visited every available consultant who specialised in his condition. When asked what his family doctor thought of him he was clearly at a loss, and on being pressed with the question: "You know: the man you visit first?" he replied, "Oh, you mean my cheiropractor." The story indicates, not only the extreme to which specialism may be carried, but the very real danger of a patient being split up into his component parts according to his systems. A general medical

[1] See THE LANCET, Oct. 18th, p. 878.

service based on an extension of clinics would rob the patient of his great safeguard of being considered as a whole by his family doctor. This it may be taken was one of the principal reasons that the panel conference came to the decision that it did. However reached the decision was a momentous one.

ELECTRO-SURGERY.

ALMOST from the dawn of surgery the cautery has been used for the searing and cutting of pathological tissues, especially with the object of preventing bleeding. It was in 1893 that Prof. PAUL OUDIN demonstrated in Paris the removal of superficial growths by high-frequency current, and for the last ten years surgeons in the United States and on the Continent have been using electrical cutting instruments carrying high-frequency current generated by modified radio-transmitters. In Germany the preference was for a current of about 8000 alternations which produced much coagulation, while American practice tended to concentrate on greater frequency with a more rapid cutting of the tissues. At the Erlangen Clinic Dr. R. DYROFF has recently been using [1] a frequency of 50,000, with a technique much more closely resembling that of HARVEY CUSHING, in operating on regions where oozing of blood has in the past hindered the work of the surgeon. A discussion at the Royal Society of Medicine early this year,[2] introduced by Mr. JOHN ANDERSON of Dundee, suggested that the possibilities of these currents have not yet been fully exploited nor their properties known with any great accuracy. In this country until fairly recently, surgical diathermy has been used chiefly for the destruction of tumours in the bladder and the removal of malignant growths in the buccal cavity. With the development and production of machines which are capable of furnishing more rapidly alternating current than have hitherto been in existence it has become possible to use a fine-pointed electrode as a cutting instrument. So easily and with such a narrow zone of destruction on each side does it cause the tissues to part along the course it is made to travel, that the term "diathermy knife" has been coined to designate such an electrode. This severance of tissue by an electric arc, for the "knife" does not actually make contact with the part, has been held to have two great advantages—namely, the sealing of blood-vessels and limitation of hæmorrhage, and a similar coagulation of the lymph spaces by which the spread of cancer cells may be blocked. A bloodless field immensely facilitates surgical work; it has prompted the use of a tourniquet for many limb operations and in gastro-intestinal anastomoses. A method which would divide tissues without loss of blood and at the same time not necessitate interference with the circulation through neighbouring areas would be enthusiastically practised by the ordinary surgeon.

This millennium, however, is not yet. Machines available in this country furnish currents rather uncertain in their hæmostatic properties. Capillary oozing is abolished, and this is on occasion a great advance, but bleeding remains free from any but the smallest vessels unless a layer of tissue is coagulated of undesirable thickness. Nevertheless, HARVEY CUSHING has demonstrated how otherwise irremovable tumours of the brain and its meninges can be eradicated by means of high-frequency cauterisation. Patients faced with a terrible risk from blood loss have been carried safely through cranial operations which must in many cases have proved fatal if such measures had not been available. In other branches of surgery G. A. WYETH has shown [3] how malignant tumours can be eradicated by the arc in place of the knife. He also devised a method of permanently sealing vessels, temporarily controlled by Spencer Wells forceps, by sparking the high-frequency current through them before removal. This attractive method of operating upon carcinoma of the breast, for example, has not been very widely adopted in England, partly because healing does not seem invariably to be satisfactory afterwards and partly because surgeons have found the method of hæmostasis by sparking to be not very trustworthy unless the arteries are very small. Moreover, the alleged great advantage of the diathermy knife, that it prevents malignant dissemination during dissection, is not such a cogent argument as might be thought. In modern surgery local recurrences after well-performed mammary excisions are quite uncommon.

Nevertheless, the claims made for this new method of operating amount to a strong case for a long and thorough trial of the method. Some of the difficulties which have been met with may be due to the use of inefficient apparatus, or lack of knowledge and experience. Mr. ANDERSON who has worked with this technique for 16 years stated at the meeting of the Royal Society of Medicine that he had only just begun to employ the Cushing-Bovie machine which, working as it does on multiple tungsten gaps, permits of more exact dehydration of tissue. This enables the surgeon to calculate how thick a layer of any particular tissue he is prepared to coagulate without sacrificing primary union after the operation. It would facilitate the further trial of the method in this country were it possible to obtain a machine equally selective but less expensive and more portable. Otherwise the prognostication of New England surgeons,[4] that in five years there will be few surgeons using the scalpel, is not likely to be realised.

STAPHYLOCOCCAL TOXINS.

TWENTY-FOUR years ago R. Kraus and R. Pribram showed that filtrates of *Staphylococcus aureus* might be so toxic that 2 c.cm. given intravenously to the rabbit would kill, while a specific antitoxin would give complete protection. In 1914 M. Nicolle and E. Cesari obtained practical

[1] Münch. med. Woch., 1929, ii., 1885.
[2] THE LANCET, 1930, i., 185.
[3] Internat. Jour. Med. Surg., September, 1930, p. 479.
[4] New England Journal of Medicine, 1929, ii., 1183.

the same results. L. E. Walbum later studied the toxin, and Julia T. Parker, in 1924, made filtrates which, though not sufficiently potent to kill rabbits, gave an intradermal reaction completely neutralisable by antitoxin. Following this investigation, Greenbaum and Harkins [1] and also Weise [2] have used filtrates in the prevention and treatment of furunculosis and other conditions, and are favourably impressed by their results. Interest in the staphylococcus was sharply aroused when the Australian Royal Commission in 1928 reported that the deaths of 12 children within 24 hours of inoculation with diphtheria toxin-antitoxin prophylactic were due to the staphylococci present in the contaminated prophylactic. This decision, it was stated, "came as a surprise to bacteriologists and clinicians." Burnet and Kellaway [3 4] in Melbourne have patiently worked for two years at the problem presented, and their work has now gone far enough to enable them to furnish a reasonable explanation of the events at Bundaberg. In a series of exhaustive papers these authors, though modestly disclaiming any new discovery, have reviewed the older work, repeated and extended it, and put our knowledge of the staphylococcus on a new plane.

Staphylococcus aureus, they find, produces a leucocidin which attacks the leucocytes, a nephrotoxin causing necrotic lesions in the kidney, a hæmolysin, and a toxin which causes an intradermal reaction resembling that obtained in the Dick test. Fortunately all these effects seem to be due to one toxin, for all are neutralised by one antitoxin. Two ingenious new points in the research were the identification of one particular staphylococcus by its susceptibility to a bacteriophage specific for the strain, and, secondly, the inclusion, amongst the criteria of a true bacterial toxin, of ability to form an antigenic non-poisonous toxoid when acted on by formalin. This property was first demonstrated for tetanus toxin by E. Loewenstein in 1914, by Glenny [5] for diphtheria toxin ("toxoid"), and later by G. Ramon ("anatoxine"). It has now been shown to hold for most, if not all, true bacterial exotoxins. Burnet found that *S. aureus*, for optimal toxin production, needs 10 to 20 per cent. of carbon dioxide in the atmosphere, but most strains produce in culture a white variant resembling *S. albus*, which has an enhanced ability to produce toxin without any addition of carbon dioxide, probably because it is permeable to other acids and so can maintain the proper degree of intracellular acidity. He suggests that a similar transformation in the individual organisms may occur when *Brucella abortus*, meningococci, gonococci—and, we may add, the acne bacillus—gradually change in subculture and become more readily cultivable. The necrosis present in a staphylococcal lesion may provide a local focus in which the oxygen tension is lowered. Fildes [6] pointed out in his work on tetanus that in injured tissue a local "anaerobic" condition may be produced, favourable to the production of toxin by the tetanus bacillus. Similarly the local increased tension of carbon dioxide may enable the *Staphylococcus pyogenes aureus* to produce its toxin and thus furnish an explanation of the malaise which may accompany even mild staphylococcic infections.

What promise is there of agents of therapeutic value from this work? It is an interesting line of thought that, had the physicians at Bundaberg in their possession an efficient antitoxin when the first child was reported ill, vigorous intravenous administration might have saved the victims. Such instances of intense staphylococcic toxæmia are, however, rare. Some of Burnet's rabbits given toxin and serum were protected against immediate death but died later. Perhaps the staphylococcus has, like the streptococcus, the two modes of attack demonstrated by Parish and Okell,[7] an acute assault by toxin and a later septic or pyogenic attack. The antitoxin made by Burnet protects against the former, but it may be that the efforts of serologists to make a serum, effective against the later pyogenic attack, will be as fruitless as in the case of the streptococcus. But we may reasonably expect results of value in diagnosis, prevention, or treatment from this rich scientific harvest of Kellaway and Burnet.

[1] Greenbaum, S. S., and Harkins, M.: Jour. Amer. Med. Assoc., 1930, xcv., 815.
[2] Weise, E. C.: Ibid., p. 324.
[3] Burnet, F. M.: Jour. Path. and Bact., 1929, xxxii., 717; 1930, xxxiii., 1.
[4] Burnet, F. M., and Kellaway, C. H.: Med. Jour. Austral., August 30th, 1930, p. 295.
[5] Glenny, A. T., and Sudmersen, H. J.: Jour. Hyg., 1921, x., 176.
[6] Fildes, P.: Brit. Jour. Exp. Path., 1929, x., 151.
[7] Parish, H. J., and Okell, C. C.: THE LANCET, 1928, i., 746.

SPA TREATMENT FOR INSURED PERSONS.

THE British Spas Federation, comprising Bath, Buxton, Cheltenham, Leamington, Trefriw, Harrogate, Llandrindod Wells, Strathpeffer, and Woodhall Spa, have completed arrangements whereby members of approved societies throughout the country, suffering from rheumatic diseases and certain disabilities following injury, may undergo spa treatment at specially arranged terms. The scheme has been established for those who hitherto have been unable to bear the expense of spa treatment. Patients coming under its auspices will be regarded and treated, both in lodgings and at the baths, as if coming in a private capacity, and the whole therapeutic resources of each spa will be at the disposal of the physicians who prescribe for them. The inclusive cost will be as follows: medical service for three weeks (extended period pro rata per week), 21*s.*; baths, waters, and treatment, 18*s.* per week; medicine, pathological, and X ray examinations, 2*s.* per week; and board and accommodation, 35*s.* per week. As a result of a meeting between the Federation and the Friendly Societies' Conference, the latter has issued to each affiliated society instructions that spa treatment is available for the various members, and the scheme is ready to be put into operation.

WORCESTER INFIRMARY CONTRIBUTORY SCHEME.—During the first nine months of the present year the cost of treating members of the contributory scheme exceeded the income from it by £1136. The explanation given is that in many instances partial or total exemption from maintenance charges has had to be granted to patients who were formerly contributors but have dropped out of benefits.

ANNOTATIONS

THE DIGESTIBILITY OF FOODS.

THE term digestibility as applied to food has at least two distinct meanings. By clinicians it is commonly used to signify the ease with which the alimentary apparatus of an individual deals with ingested food, by physiologists to express the degree of absorption of the components of food from the alimentary canal. In dealing with patients with disordered functioning of the alimentary tract the choice of suitable foods is determined largely by considerations of digestibility in the first sense of the term. It is obviously very difficult to grade food satisfactorily in respect of this type of digestibility, for its assessment depends ultimately on the subjective sensations of individuals who react in different ways to the same food. Attempts have been made to dispense with subjective sensations and correlate digestibility with measurable quantities, such as the time taken for food to leave the stomach and the amount of gastric juice secreted in response to any given food. This method may have its uses but leads to curious results—the demonstration, for example, that sand is more digestible than roast beef. The measurement of digestibility in the physiologist's sense is a simpler matter, demanding merely a chemical examination of the food ingested and the material leaving the alimentary canal. Work has recently been published [1] on the utilisation of common foods which illustrates some of the differences which may exist between the digestibilities of certain foods when considered from the two standpoints. The experiments were carried out on dogs in which short-circuiting operations had been done, so that the residue of food which had passed through the small intestine could be collected without stagnating in the large bowel. Under these conditions the ratio of the weight of the residue collected to the total food consumed was found to be a reliable index of the amount of food absorbed. In such animals sour milk was better digested than sweet milk, and the addition of bread to milk decreased the amount of moist residue obtained with milk alone. Evaporated milk, unlike ordinary milk, did not decrease the amount of residue obtained from bread. Both cheese and meat were better digested when given in the form of lumps than when given finely comminuted. This curious fact is probably explained by the retention in the stomach for a longer period of the larger masses, which are thus better prepared for the final stages of digestion in the intestine. Soft-boiled and hard-boiled eggs were more completely absorbed than raw eggs. The latter passed too quickly through the intestine for much digestion to take place, yet the addition of raw egg to milk produced a mixture which was better digested than milk alone. Raw starch was very incompletely digested, but the mixture of raw egg and raw starch was dealt with quite satisfactorily. Lactose had a pronounced purgative action and any food given on the day following that of lactose administration was hurried more quickly than usual through the bowel and therefore less well absorbed. Dextrose and sucrose were very completely absorbed, as was rice. The most interesting feature of the experiments is the demonstration that one kind of food may influence the digestibility of another taken either at the same time as or subsequently to it. Some forms of food, which are usually considered to be distinctly indigestible in the clinical sense of the term, were dealt with more efficiently when taken in lumps than when minced or grated. In other words, the dog derives more benefit from its food when it is bolted than when it is throughly masticated. Obviously these results cannot all be applied to human beings as they stand. They suggest, however, that by judicious trial of combinations of foods more efficient nutrition may possibly be brought about in difficult cases than by the use of single foods which have the reputation of being in general easily digestible. They also emphasise the importance of building up the diet gradually in disorders associated with diarrhœa and gastro-intestinal disturbances generally.

[1] Childrey, J. H., Alvarez, W. C., and Mann, F. C.: Arch. Int. Med., 1930, xlvi., 361.

FURTHER OBSERVATIONS ON PSORIASIS.

A CONCEPTION, however original, of the ætiology of a disease, which cannot be disproved unless a specific organism is found to be the causal factor, is not, as a rule, a very satisfactory starting-point for research. Prof. Samberger, however, has given special study to psoriasis for many years, and his views command respect. They are based on a theory of predisposition of the individual, coupled with a specialised dyscrasia of cutaneous cell response. He records [1] an interesting observation that the psoriatic seldom or never produces a corn in response either to the stimulus of manual labour or the friction of an ill-fitting boot. The corneous layer of the epidermis does not, he presumes, hypertrophy in the normal fashion, and he adds to this surmise the observed clinical fact that psoriatics seldom or never suffer from boils, because exfoliation takes place before the staphylococcus invades the follicle, and the skin generally cannot respond to septic infections in the usual manner. In his view there is always a congenital, sometimes hereditary, weakness or dyscrasia of the keratin-forming cells, and this is the true cause of psoriasis. An individual with this type of skin can only react by producing the scaly patches. He argues further that this biological defect can be present in a greater or lesser degree, so that in some cases the smallest stimulus is sufficient to unmask the tendency, and the unfortunate patient is scarcely ever free from some psoriatic manifestation, while in others some quite extraneous factor, such as a coincident tuberculous or gouty diathesis or a defect in the hygienic environment—an absence of sunlight or fresh air—is the determining factor. In this way it is possible to explain the therapeutic effects of actinotherapy and the excellent results of sea-bathing on the Lido or the coasts of Northern Africa. The theory here presented receives some support from the histology of the lesions. Many observers have noted the presence of microbial abscesses in the parakeratosis—or corneous hypertrophy—that is characteristic and pathognomonic in the disease. No specific organism, and for the most part only staphylococci, has ever been stained or cultured from these minute dry purulent collections, and it is Samberger's contention that they are not primary but merely secondary manifestations or accidental infections of an inherently devitalised

[1] Further Observations on the Nature of Psoriasis. By Prof. F. Samberger, Prague Dermat. Woch., 1930, xc., 261.

epidermis. While it is difficult to cause a simple infection superficially, the deeper infections are common enough, and a well-known clinical type, although it is rare, is that termed psoriasis rupioides. The fact that psoriasis has certain favourite localisations, such as on the scalp and the knees and elbows, would seem at first sight to militate against the view of a congenital dyscrasia, but on the contrary it supports the contention. If there is a general devitalisation and "cutaneous cohesion defect" in these people, then it is just in the above-mentioned areas that we should expect to find its chief manifestations, for the scalp is a microbic reservoir, and the knees and elbows are always being exposed to friction. The numberless experiments designed to show the microbic origin of psoriasis, whether coccal or, as recently in America, by monilia, were always successful —but only in patients subject to the disease or with a history of it. It is quite likely, therefore, that psoriasis is always of bacterial origin, but that bacteria are only the accidental and associated, not the fundamental, cause. A consideration of these views explains much that is mysterious about psoriasis, and has, in addition, a practical therapeutic bearing. Samberger asks himself whether the dyscrasia must be regarded as purely cutaneous, or whether it may not be a secondary effect of endocrine deficiency or disturbance. The answer cannot be given until we possess more powerful and specific glandular products, for the results of the hormone treatment of psoriasis are notoriously uncertain at the present time. There is no specific remedy for psoriasis, and if Samberger's ideas are substantiated and accepted it is difficult to see what form these measures will take in the future. He himself thinks we shall have to grapple with the problem prophylactically, and possibly even while the anticipated case is still a fœtus in utero. Meanwhile, we can at times, at any rate, treat the associated or predisposing factors, such as have already been specified, and attempt to cure the patient of his gout or his tuberculosis by creating for him the best possible social and hygienic environment. We can also attempt to influence the general vitality and cohesion of the corneous layers by internal remedies, and for this purpose with all its disadvantages there is nothing better than arsenic. Unfortunately, no known preparation will effect this without causing toxæmic symptoms when it has to be administered for an indefinite period.

THE LISBON CONGRESS.

THE Thirteenth International Congress of Hydrology, Climatology, and Medical Geology took place in Lisbon, in conjunction with the annual meeting of the International Society of Medical Hydrology, from Oct. 15th to 23rd. H.E. the President of the Republic consented to act as *Président d'honneur*, and leading members of the Government took an active part in welcoming the Congress, the Prime Minister presiding at the opening ceremony. The President of the Congress was Prof. Egas Moniz, and the President of the International Society of Medical Hydrology was Dr. Belo Moraes, professor of clinical medicine in the University of Lisbon. There was a large attendance of members of both organisations, nearly every European country being represented. The programme included the titles of well over a hundred reports and communications.

The proceedings of the section of hydrology opened with reports from Prof. Maurice Villaret and Dr. Justin Besançon, of the Faculty of Medicine of Paris, and Dr. J. H. Cascão de Anciães, Prof. Mark Athias, and Dr. Heitor da Fonseca, of Lisbon. The reports were based on a series of most exhaustive experiments and investigations into the action of various mineral waters upon the unstriped muscle of the intestine, the gall-bladder, the bronchi, the ureter, the bladder. The results varied with the different mineral waters employed, and radio-activity appeared to be a factor of importance even when low in degree. The authors conclude that crenotherapy, or mineral water treatment, is one of the most efficient means of dealing with muscular spasm, but that the results vary according to the cause and mechanism of the spasms. They urge the establishment of laboratories in every spa for the investigation upon scientific lines of the effect of mineral waters in this as well as other directions.

At the second session of the section of hydrology, Prof. Dr. A. de Moraes Sarmento, of the University of Coimbra, presented a report upon the blood changes produced by mineral water treatment. He dealt with the uric acid cholesterone, and bile-pigments in the blood, the superficial tension and the viscosity of the blood-serum, the coefficient of sedimentation, and the leucocytes. Observations were made upon a large number of cases, and the author concludes that the alterations in the blood produced by the use of mineral waters constitute an element of high value in diagnosis, prognosis, and treatment. He appears to be unaware of the important work which has been done in England on these lines, but his results call for careful study. His report was followed by communications from many other recognised authorities, and included observations upon the treatment of syphilis at the spas, upon calcium metabolism, the treatment of some forms of arthritis, and many kindred aspects.

The third session opened with a report by Prof. Durand-Fardel, on L'assistance sociale en rapport avec les stations hydro-minérales et climatiques, which comprised, in addition to his own observations, a report of the work done in this direction in other countries as reported to the International Society of Medical Hydrology. Prof. Durand-Fardel's paper, with a report drawn up by Dr. Max Hirsch, of Berlin, also came under the consideration of the special committee of the International Society of Medical Hydrology, which is dealing with this question. Stress was laid in Prof. Durand-Fardel's report on the need to establish official teaching in all centres of medical instruction; the need for wider provision of facilities for the treatment of the poor in health resorts; and the provision of financial assistance through insurance companies, and by other means. Prof. Carneiro Pacheco, of Lisbon, followed with a paper on Aspects juridiques de l'hydrologie.

A joint session of the Congress with the Society of Medical Hydrology was held to discuss the treatment of digestive disorders by waters and baths. Prof. Armando Narciso opened, and was followed by Drs. Aine and Mazeran, with an important communication on the treatment of affections of the colon; Dr. F. Kraus, Dr. Michael Foster, and Dr. Zoltau Räusch dealt with disorders of the liver and bile-ducts; and Dr. Paul Weiss read a paper on the treatment of digestive disorders in childhood by mineral waters. Prof. Andrea Vinaj, who was unable to attend, sent a communication on the hydrotherapy of disorders of the stomach and duodenum.

In the section of climatology Drs. Georges Baudoin and Piéry presented an exhaustive analysis of the physical elements of climate and their physiological

and therapeutic effects. Prof. Cirilo Soares addressed the section on climatology and medicine, and many papers dealing with the climate of Portugal and its health resorts were presented. Prof. Lopo de Carvalho, of the Faculty of Medicine of Lisbon, dealt with influence of climatic changes in pulmonary tuberculosis. In the section of geology a number of papers were read dealing chiefly with the origin, character, and composition of various mineral springs. After the completion of the scientific business the Congress visited some of the more important spas of Portugal, including Estoril, Curia, Luso, Vidago, and Pedras Salgadas.

The International Society of Medical Hydrology received and discussed the reports of three sub-committees. That of the social hydrology committee was referred for further inquiry on the position in different countries, and the possibility of development. The report of the committee upon the protection of spas was approved, but referred for further work on indicated lines. The report of the international standard measurements committee was approved in principle and referred for modification of details.

SAFETY FIRST IN INDUSTRY.

IN a paper read at a recent sessional meeting of the Royal Sanitary Institute, held at Nottingham, Dr. Leonard P. Lockhart remarked that in his opinion the safety-first movement in industry has not only failed to produce a diminution of industrial accidents, but has made a good many people too frightened of hurting themselves to carry on their job after even the most trivial mishap. The campaign advising people not to return to work too soon after influenza has over-reached itself, and there are many thousands of people taking weeks to recover when a few days would be adequate. They are certainly ill, but not with toxic post-influenzal depression. The depression is a mental process of fear that by going back to work they may relapse, and this in turn gives rise to purely subjective symptoms which it is next to impossible for a busy practitioner to sift to its ultimate depths. The same preoccupation with physical signs leads, he thinks, to honest but nevertheless quite wasteful and misguided employment of additional as well as ordinary insurance benefits. If there were no benefits people would struggle back to work, many would suffer for it, but the bulk would sustain no ill-effects. There would be difficulties and anxiety in many homes, but the nation as a whole would have a very much smaller sick absence list. Dr. Lockhart is careful to add that he is not in the least advocating the repeal of social insurance enactments, but he thinks the time has come to modify and remould our schemes lest by dire necessity worse should befall us. This argument leads him on to the contention that the very thing we have created to help our fellow-men has actually brought about a degeneration of that individual will-power by which alone man retains his personality.

"If a muscle is splinted it atrophies, if it is used to fight, to struggle, and to work it develops strength, provided that it is allowed to do so gradually and that the strain is not put on too suddenly or too soon. If from our birth the State protects our health, if we are fed too exclusively on pasteurised education and a sterilised mental pabulum then, sooner or later, disaster will befall us and find us weak and unresisting. There is no question of going back to the olden times of disease and famine, poverty and misery in order to obviate the dangers that now beset us, but rather should we use all our modern scientific and administrative machinery to educate people to stand on their own self-supporting legs and not to lean on an omnipresent, omniscient abstraction, called authority, to save us from the pitfalls that beset our lives."

The cure seems to Dr. Lockhart to lie in personal touch, and in effecting that touch early in the lives of young people. It is here, he thinks, more than in any other way that medical work within industry can achieve some of its best results, for by steady and persistent education much can be done to divert into more normal channels some of that excessive introspection which is a characteristic tendency of the present time. The private doctor knows the patient, but the factory doctor knows the work, and he knows, or should know, a good deal about the patient in relation to his working environment, so that the two between them can assess fitness for work in a way which neither of them can do alone, and as a result of this coöperation the task of adjusting the dysharmonics to reality can be greatly facilitated.

INVALIDITY AMONG TEACHERS.

IN reviewing the work of the school medical service in London Dr. F. N. K. Menzies[1] deals with many matters which deserve more public notice than they have received; one of these is the breakdown of employees in the education service. The causes of death and retirement of teachers have been analysed by Dr. Letitia Fairfield, and some interesting facts elicited. A striking difference between the sexes is the fact that while the percentage of deaths among the men was greater in the proportion of 167 to 100, the retirements on medical grounds were more than twice as frequent in the women—1 in 194 being invalided out of the service yearly, as against 1 in 525 of the men. Dr. Fairfield ascribes the discrepancy to three main causes:—

1. That the man has family obligations and cannot afford to retire unless he must. This is not to suggest that women teachers take breakdown pensions unnecessarily, but rather that many men have to struggle on when their health would indicate retirement.

2. That women tend to age earlier than men. It is rather to a general failure of health than to a tendency to a physiological crisis in the later 'forties, that the difference in the total figures can be attributed. So far as breakdowns are concerned, the number rises steadily with every quinquennium after 40, and is highest between 55 and 60. A certain number of cases is directly attributable to the menopause but in the majority, menopausal symptoms, if present, have probably no causal influence on the general state. The group classified as general debility, for example, showed a physical "break-up" usual in old age, but occurring in these women (who had in the main worked exceptionally hard) in middle life.

3. The fact that certain organic diseases or defects interfering markedly with a teacher's career, are much more common in women than in men.

In a classified list of causes of retirement over the five-year period 1925–29 nervous diseases (including the headings organic, functional, and psychoses) figure largely with a total of 32 for men and 94 for women. Further light on this form of invalidity was thrown by Dr. Fairfield in her analysis of temporary absence for illness in a group of women teachers which appeared in the 1928 report. She found 171 cases of functional nervous disorder, which covered many long absences, some extending to 12 months, and showed this to be a very important factor in ill-health. Cases of actual overwork are rare, but the profession is inevitably strenuous and the personal circumstances of the teacher may have their difficulties. Both prevention and treatment are on a less satisfactory basis than is the case with

[1] Annual Report of the London County Council, 1929. Vol. III. Public Health, p. 141 et seq. London: P. S. King and Son. 2s. 6d.

purely physical disorders. Prevention opens up large questions which are not discussed in the report. Some of them are all too familiar. For example, to disallow women teachers from retaining their posts after marriage often means that marriage is impossible for them. Others are compelled by financial circumstances to go on working when they feel the strain is not good for them. While from the standpoint of the health of the woman teacher and of her own children (as well as for the benefit of the scholars) it would be an ideal scheme to retain teachers after marriage on a part-time basis; such a course would create administrative difficulties. Generally speaking, the continuing improvement of education is bound to affect the teacher. Smaller classes, better classification, and improvements in school hygiene will not only benefit the scholars, but must inevitably lighten the burden of those who instruct them.

AN EXAMPLE OF SAFE CHILDBIRTH.

LAST year a departmental committee, over which Sir Robert Bolam presided, named the essentials of a maternity service. Speaking on Monday last at a conference on maternal mortality (see p. 1000), the Minister of Health insisted on the coöperation needed if these essentials are to be realised, and, he added, "much education is still needed to persuade the mothers of the country of the importance of securing the skilled care to which they are entitled." There is in East London a good example of the safety that can be achieved by simple means if both kinds of coöperation are available. Thirty-five years ago a maternity home of seven beds was opened in Shadwell, and by successive extensions and removals this grew to be the East End Mothers' Lying-in Home, occupying eight adjacent houses in Commercial-road, with accommodation for 56 patients, now rechristened the East End Maternity Hospital. During the whole period nearly 51,500 confinements have been attended in or from the hospital with a maternal death-rate of 1·35 per thousand, but during the last five years that figure has been reduced and among 10,376 cases there was a death-rate of only 0·48 per thousand from puerperal causes or of 0·67 including incidental deaths. The visiting medical officer, Dr. W. H. F. Oxley, who communicated these figures to the Obstetric Section of the Royal Society of Medicine on Oct. 17th, pointed out that the hospital differs from most others in its routine work being done by midwives, the general practitioners on the staff being called in only when abnormality is present. The figures quoted give a fair picture of the results of the hospital's work for married women in the East End; the working classes are attended without selection on medical grounds, and few emergencies are admitted from outside sources, so that the patients may be regarded as a true sample of the child-bearing population of the district. Dr. Oxley gave some details of the routine work of the hospital. Occipito-posterior positions are regarded as serious abnormalities and are indeed the most frequent occasion for the application of forceps. Attempt at antenatal rotation has met with only a moderate degree of success. In breech presentations on the other hand antenatal version has been successful in about half the cases. Special care in delivery has largely eliminated the dangers from birth trauma and asphyxia in the remainder and Dr. Oxley suggests that in teaching hospitals breech presentations might be left uncorrected in order to give the pupils the necessary experience. The proportion of cases in whom labour was induced was 1·2 per cent; the forceps rate 2·9 per cent.; no craniotomies were performed and only one Cæsarean section. These figures suggest to Dr. Oxley that in other hospitals there is an unnecessary number of obstetric operations. Antepartum hæmorrhage is treated by the routine use of saline injections whose success is evident from the fact that 121 consecutive cases were treated without a maternal death. There were no deaths from eclampsia, from hæmorrhage (in booked cases), or from sepsis following normal labour. Of the five deaths two occurred outside the hospital, three from emergency in the hospital. A comparison of the maternal death-rate with that of the two metropolitan boroughs from which the bulk of the cases were drawn shows that the expected maternal death-rate has been reduced by three-quarters; the stillbirth and neonatal death-rate have also been reduced but not in the same proportion. Dr. Oxley attributes the success of the hospital's work to the sympathetic coöperation between the medical staff, the midwives and the patients along with a carefully thought-out organisation. These are potent factors. Dr. Oxley, we understand, makes a routine visit himself daily to the hospital, and no difficulty is experienced in getting expectant mothers to attend the antenatal clinic. His results induced the President of the Section, Sir Ewen Maclean, to remark that they might lead to some modification of the insistence on some of the current obstetric methods and equipment. Mr. L. G. Rivett who is on the consulting staff of the hospital expressed, for himself and others, the belief that continuity of method and tradition of work had much to do with the good record. In only one respect did the discussion reveal criticism of the methods practised. The Section was unanimous in regarding the treatment of local sepsis by curettage as a risky procedure. Speaking from an experience of 500 cases of local uterine infection in the Metropolitan Asylums Board fever hospitals Mr. J. M. Wyatt said that all had done well without intra-uterine manipulation other than injection of sterile glycerin.

THE NAME OF SYPHILIS.

THE term "syphilis," which has puzzled many inquirers, is derived from the writings of Hieronymus Fracastorius, whose history is well described by Dr. D. W. Montgomery, of San Francisco, in the *Annals of Medical History* for July. Born at Verona in 1482, ten years before Columbus discovered America, Fracastorius lived through the time of stress, poverty, and revolution in Italy. In the track of the armies which were constantly marching through the country, three terrifying diseases—plague, typhus, and the new venereal infection—added to the miseries of the people. Fracastorius wrote about all of them, but it was his poem on the third that has kept his name alive. It was the time of the classical revival, and he had taught himself to write Latin tastefully in the style of the best classical authors, so that his works were read with pleasure by the discriminating and the influential. He was besides a master of the science of the time, and when it was anxiously asked how came it that the terrible disease was unloosed upon the world just at this time, he gave the ready answer that in the Eastern hemisphere Mars was in opposition to Saturn and Jupiter, and their quarrel had unloosed this misery. Its origin in the West, long ago, was due to the indignation of the local sun-god, who had thus punished the world because

he had found the swineherd, Syphilis, sacrificing not to him but to the local king. The poem in which he told this story was handed round among the learned, and was at once approved, bringing its author fame and affluence. An appropriate name for the new disease was wanted, and "syphilis" drove its competitors out of use because (Dr. Montgomery thinks) its sibilance suggested the "viperous, venomous nature of its virus." The swineherd's name is fancifully derived from σύς and φίλος.

A SOCIETY OF PHYSIOTHERAPY.

A MEETING of medical men interested in the study and practice of physiotherapeutics was held at the rooms of the Medical Society of London on Oct. 24th, with Sir Leonard Hill, F.R.S., in the chair. After considerable discussion a resolution that a society of physiotherapy be formed and a further meeting held at a later date was carried unanimously. Medical men and women specialising in any of the different branches of physiotherapeutics who desire to be present at the next meeting (which will be held under Sir Leonard Hill's chairmanship on Friday, Nov. 14th) are invited to apply for invitation cards to the acting hon. secretary, Dr. R. King Brown, 17, Featherstone Buildings, London, W.C. 1.

INFANT FEEDING AND ENVIRONMENT.

MANY comparisons of breast-fed and bottle-fed infants have been made and the conclusions drawn from these almost always favour breast-feeding. Glazier[1] has studied the children attending baby clinics in two districts of Boston, one in the poorest part of the town and the other serving children living under much better economic, social, and hygienic conditions. He found that infants in the better district, however fed, gained more weight, had a lower incidence of infection and rickets, had a much lower mortality, and developed better than those from the poorer district. A striking observation was that half the babies from the poor clinic showed clinical signs of rickets when first seen. The bottle-fed infants in both districts gained less weight in the first six months and more in the second than the corresponding breast-fed babies; over the whole year the bottle-fed gained most weight. The difference in weight between the two classes was, however, much less than that between the two districts. Glazier attributes this largely to the high incidence of infection in the poorer clinic, owing to bad hygienic conditions and overcrowding. In the poorer district bottle-fed children were more liable to infection than those fed on the breast, although the reverse held true in the better locality. This is probably to be explained by lack of cleanliness and sterility in the preparation of the food. Another noteworthy fact was that the mortality of children attending the clinics was half that of non-clinic infants in the same district.

[1] Glazier, M. M.: New Eng. Jour. of Med., Sept. 25th, p. 626.

ROYAL NORTHERN HOSPITAL: POST-GRADUATE COURSE.—On Nov. 4th a course of free post-graduate lectures and demonstrations begins at the Royal Northern Hospital, Holloway-road, N.7. They will be on Tuesday afternoons at 3.15, and the subjects and speakers will be announced each week in our Medical Diary. From Dec. 1st–5th there will be an intensive course with one or more lectures each afternoon. Full particulars may be had from Dr. E. G. B. Calvert, Dean of the hospital.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt. E. V. Barnes to be Surg. Lt.-Comdr.
Surg. Sub-Lt. T. F. Tierney to be Surg. Lt.

ROYAL ARMY MEDICAL CORPS.

ARMY RESERVE OF OFFICERS.

Lt.-Col. J. E. Powell, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

ARMY DENTAL CORPS.

Capt. C. H. Pywell to be Maj.

TERRITORIAL ARMY.

Maj. J. A. Stenhouse to be Lt.-Col. and to comd. the 149th (Northumbrian) Fd. Amb. vice Lt.-Col. R. Errington, vacated.
Capt. R. N. Craig resigns his commn.
Lt. C. R. C. Moon to be Capt.
R. J. Ormsby to be Lt.

ROYAL AIR FORCE.

Flight Lts. G. M. Anderson and G. O. Williams are granted permanent commissions.

The undermentioned Flying Officers are promoted to the rank of Flight Lts.: N. M. Jerram and G. O. Williams.

DENTAL BRANCH.

Flying Officer B. L. Harrington is promoted to the rank of Flight Lt.

INDIAN MEDICAL SERVICE.

The undermentioned officers retire: Maj.-Gens. A. Hooton and Sir T. H. Symons; Cols. H. Ainsworth, A. W. R. Cochrane, and M. MacKelvie; and Lt.-Col. R. Kelsall.

HONORARY PHYSICIANS TO THE KING.

The King has approved of the appointment of Col. G. L. Thornton (T.A.) and Lt.-Col. (temp. Col.) W. P. MacArthur, R.A.M.C., as Honorary Physicians to the King.

PARLIAMENT

NOTES ON CURRENT TOPICS.

THE NEW SESSION: KING'S SPEECH.

THE new session of Parliament was opened on Tuesday, Oct. 28th by His Majesty the King. In the gracious Speech from the Throne His Majesty said that he followed with grave concern and sympathy the continuance of heavy unemployment among so many of his people. The Government would persist in its efforts to develop and extend home, Imperial, and foreign trade, and to help in measures which would lead to greater efficiency in industry. Proposals would be laid before Parliament for the promotion of settlement and employment on the land, and of large-scale farming operations, and for the acquisition and improvement of agricultural land in need of reconditioning, and for the organisation of producers for marketing purposes. A Commission would be set up to inquire into the whole question of Unemployment Insurance, and in particular into the allegations of abuse of its provisions. The Commission would be asked to present interim reports on the most pressing questions and, if required, legislation based upon them would be introduced. In the meantime, a measure to make further financial provision for the Unemployment Fund would be laid before Parliament. Legislation would be introduced to secure for the community its share in the site value of land. Measures would also be submitted for raising the age of compulsory school attendance; for amending the law relating to trade disputes and trade unions; for setting up a Consumers' Council; for the modification and extension of the law relating to town planning and the preservation of rural amenities; for the amendment and consolidation of the Factory Acts; for electoral reform; for the ratification of the Washington Hours Convention and the International Convention for the Safety of Life at Sea; and for the establishment of a new statutory authority to deal with passenger traffic in London.

CLINICAL INTERPRETATION OF AIDS TO DIAGNOSIS

A Series of Special Articles, contributed by invitation.

LXXXVII.

ELECTRICAL REACTIONS IN DISEASES OF NERVOUS AND MUSCULAR SYSTEM.

THE remarks which follow are based on the ocular observation of several thousands of muscle and nerve reactions in the last ten years. The lesions studied include all types of upper and lower motor neurone lesions and myopathies, as well as a very large number of nerve injuries tested in the last years of the war and subsequently.

The foundation of all the electrical tests done on the human body was laid by the laboratory work on the muscle and nerve preparations of the frog. Important as this work has been, it is obvious that such tests cannot be done on the human body with the same amount of accuracy. Whereas the laboratory worker applies his electrodes to the naked nerve, the current in the hands of a worker in an electrical department has to pass through skin, superficial fascia, deep fascia, fat and muscle tissue, all of which act as barriers. To these barriers are sometimes added scar tissue, fibrous tissue, œdema, ischæmia, and hyperæsthesia, and in some cases a natural idiosyncrasy against or antipathy to electricity.

Some physicians and surgeons believe the electrical responses of muscle to be of little importance in nerve injuries. In my experience electrical reactions are a useful adjuvant in the diagnosis of a disease or nerve injury, or in the extent of a disease or nerve injury. Typical examples of cases in which they have proved useful are: (*a*) a gunshot wound of the lower third of the arm, with a small entrance and exit scar, sent down as a functional wrist-drop—as a result of an electrical test a complete organic paralysis was found; (*b*) weakness of finger and thumb extensors called functional, which by the nature of the electrical reactions was found to be a case of syringomyelia. Electrical reactions are, it is true, hardly ever diagnostic alone. In most cases sent down to an electrical department for testing, a diagnosis has already been made. But when, for example, infantile paralysis, progressive muscular atrophy, or disseminated sclerosis has been diagnosed, it is desirable to know the extent and degree of the complaint. In a child who has a complete drop-foot with no voluntary power, consequent upon anterior poliomyelitis, if a faradic response in extensor hallucis digitorum and peronei is obtained, it is possible to take a less gloomy view of the prognosis. Again, in upper motor neurone lesions, the spasticity of the muscles, combined with the history and other clinical signs, is sufficient for a diagnosis, without the electrical reactions. But they can elicit the facts that cases of hemiplegia are hyperexcitable to the faradic current or that those with paralysis agitans are hypoexcitable. In the myopathies I have found that the electrical reactions in early or doubtful cases are negative, and therefore not of much assistance, although a negative reaction will sometimes rule out disease. But in old-standing cases clinical signs are obvious, and the muscle responses to electrical stimuli conform to those of the brain stimulus. For example, in myasthenia gravis there is a gradual fatigue of muscle to brain and nerve stimulus, and a similar fatigue when the nerve is stimulated by the faradic current. The electrical reactions are confirmatory and adjuvant. In one type of case—i.e., the patient with the subjective paralysis—the electrical reactions are the only real guide. The hysteric, in the hands of a skilled observer, some time or other will give himself away, but it is convenient to have at hand the faradic and galvanic currents, and by their use important mistakes in prognosis may sometimes be avoided. In a case under my own observation a complete functional paralysis of hand, arm, and upper arm followed a wound in the neck of a patient, a cornet player, who expressed great disappointment at the prospect of never playing his instrument again. In this case the will of the patient, a faradic battery and the persuasive powers of one doctor were able to reverse the opinion of a medical board of five; but the effect on the mind of a patient of being told by a group of doctors that he will not be able to use his limb again may be serious, for his conviction may prevent his complete recovery.

The Currents in Use.

The two chief currents which are used for testing in an electrical department are the faradic and galvanic. In addition to these the condenser method of Lewis Jones is useful and was employed by Dr. Worster-Drought in testing some 2000 cases of nerve injury from 1916–19. For the benefit of those who have forgotten the electrical reactions it may be desirable to set them out:—

1. *Healthy muscle*—brisk response to both currents.
2. *Upper motor neurone lesions*—hyperexcitability to both currents.
3. *Lower motor neurone lesions*—anything from a qualitative or quantitative response to the faradic current, and an altered response to the galvanic current, to no response to either current.
4. *The myopathies* or muscular dystrophies—
   - *Pseudohypertrophic muscular paralysis*—faradic and galvanic responses diminish quantitatively.
   - *Amyotonia congenita*—faradic and galvanic responses diminished quantitatively and excitability of muscle is diminished.
   - *Myotonia congenita*—well-known myotonic reactions following stimulus of faradic or galvanic current. Muscles relax very slowly.
   - *Myasthenia gravis*—two minutes of the faradic stimulus causes muscle fatigue, and the muscle will respond no longer. No change to the galvanic stimulus.

Nerve impulse is conducted by the axis-cylinder to the end-plates in muscle. Complete interruption can be obtained by section or disease of the nerve itself, or by destruction of the anterior horn cell, or by a lesion in the nucleus of a nerve, such as the seventh. Nerve responds to the duration of a faradic stimulus, but muscle will not, because it conducts slowly and requires a stimulus of prolonged duration. The study of the quickness of the excitability of nerve and muscle (now known as chronaxy) has been pursued in the laboratory with suitable apparatus by Lapicque, Adrian, Keith Lucas, and Bourgignon, and at one time it was hoped that the variation in results obtained under different conditions would have considerable practical significance in medicine. Although the work is of great theoretical interest, their methods are not employed in clinical diagnosis.

Reaction of Degeneration.—When a muscle has been cut off from its nerve-supply it will not respond to the faradic stimulus after the first 10–14 days. It will, however, respond to the galvanic stimulus, but in an altered manner. Instead of the contraction and relaxation being brisk, it will be prolonged, slow, or sluggish. This can easily be seen by the naked eye

of a constant observer, especially when compared with the stimulation of the muscles on the sound side. When the muscle exhibits these reactions—no faradic response but a slow galvanic one—the muscle is said to suffer from reaction of degeneration.

Absolute Degeneration.—When, however, some time elapses from the onset of the injury and atrophic ischæmic fibrosed muscles have to be tested it will be found that there is no response to the galvanic stimulus. The muscle should then be said to be suffering from absolute degeneration. This is a term recommended by Turrell, and I strongly advocate its use. It generally implies little hope of recovery. Every case must be taken on its merits, but in my experience any muscle in a case of, say, anterior poliomyelitis which shows this absolute degeneration after two years from the onset of the disease has not much hope of recovery, and physical treatment employed in the hope of restoring function to that muscle is wasted.

Next one must consider the case in which no faradic and only a slow galvanic response is present. I dislike the term "partial reaction of degeneration," and its meaning is not constant among electrotherapists. Admittedly a test with no faradic response and a slow galvanic one means that there is an action of degeneration present, but it is in my opinion a far more hopeful finding than an absolute reaction of degeneration. I prefer, therefore, not to use the word "partial" but to state the reactions and give an explanation. In a large number of cases, faradic responses and slow galvanic ones are present in a group of, say, three muscles supplied by a larger nerve, but not in the rest. For example, with the external popliteal nerve, tibialis anticus, extensor longus digitorum, and extensor hallicus may respond to faradism, and the rest of the muscles supplied by that nerve may not. All, however, would have slow galvanic responses. Such a case, I suggest, requires some further explanation. It is surprising how, in straightforward nerve sutures, nerve regeneration, voluntary power, and faradic response follows a course. A nerve regenerates in from 6–9–12 months, according to the position of the injury. Knowing this, it is possible to say that incomplete recovery after these periods is indicative of some obstruction, generally fibrous constriction.

James Sherren has said, "If the muscles under examination react to the interrupted current, no further investigation is necessary." Experience has shown that this certainly is not the case. It is possible to watch the recovery of a patient if, when the faradic response returns, the strength of the current needed to produce that response is noted. For example, the number of layers used in the secondary induced current of a Smart Bristow coil may be recorded. Supposing the muscle being tested responds to eight layers, and in a month's time responds to six layers, and then to four layers. This means that not only are the tissues, circulation, and general condition of that muscle improving, thus offering less resistance to the current, but also that there are a larger number of axis-cylinders regenerating.

At the same time the quantitative response of the muscle to the faradic stimulus improves. A nerve responds fully to a minimal brain stimulus; therefore, if a sufficient number of axis-cylinders have regenerated, voluntary power should return. The condition of each nerve injury and its position must be taken into account when giving a prognosis. A comparison may be made between two cases, in each of which there is no return to faradic response after one year: (1) a sciatic injury at the notch, and (2) a Bell's injury. In the first case there is yet hope; the second is hopeless.

The Condenser Set with Fixed Voltage.

Worster-Drought, using a condenser set where the voltage is fixed, and the duration of each impulse known, showed that certain muscles normally responded to certain stops on the condenser. There are 12 stops. No. 1=0·016 microfarads at 100 volts, and No. 12 stop=4·0 microfarads at 100 volts. He demonstrated that, if in lesions of the majority of nerves, the majority of muscles react on No. 7 stop (=0·25 microfarads) an incomplete lesion may be diagnosed, and operation is not advised. If in muscles normally reacting on No. 1 or No. 2 stops no response is obtained below No. 8 (most of the muscles supplied by the damaged nerve react between Nos. 8 and 10) then the case is re-examined after six weeks, and if there is no improvement in the condenser reaction, immediate operation is advised. This method has the advantage, perhaps, in advising surgical interference at an earlier date than is suggested when the faradic and galvanic current method of testing is employed. But the condenser method has this disadvantage, that sometimes muscles which would not contract to any stop would do so to the galvanic current.

Change in Galvanic Response.

In addition to the response of muscle to the faradic current and the condenser discharge as guides to the condition of recovery of an injured nerve, there is the change in the galvanic response. Hand in hand with the return of the faradic response, the galvanic response becomes brisker and more natural, and the amount of current required to produce that response is less. In my opinion, in doubtful cases the condition of the galvanic response is by far the most important. That the response is sluggish, in cases of nerve injury or disease, cannot only be seen by the naked eye, but can also be proved by the myographic method of Larat. This is very convincing, and I had the opportunity of seeing several cases tested by Dr. Murray Levick and wish the practice were more generally adopted. It has also been observed that in cases where reaction of degeneration is present the anodal closing contraction is greater than the kathodal closing contraction, and though this is not constant it is yet a useful adjuvant.

A few illustrative cases will show the extreme usefulness of the galvanic response.

1. Mrs. A. Amputation of breast; arm kept to side. Patient persists that she is unable to abduct arm, and said to be "difficult." Arm moved under anæsthetic; no more power after. In fact deltoid weakness more marked. Presence of functional paralysis of deltoid suspected. Electrical test showed a weak faradic response and a very slow galvanic. Patient subsequently developed a wrist-drop and further signs of an injury to the plexus.

Two cases of winged scapula, following operation.

Child.—After operation for removal of glands of neck. Faradic response in serratus magnus, galvanic prolonged.

Adult.—Following an operation on the nose a swelling appeared at the level of the superior angle of the scapula. Faradic response present in serratus magnus and a slow galvanic.

These are a few cases out of many types, to show the importance of the galvanic response. The child could not malinger at its age, and the adults were relieved of the insinuation that they were hysterics.

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SPECIAL ARTICLES

THE TOXICITY OF VITAMIN D.

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IN 1927 Rosenheim and Webster[1] showed that ergosterol, when irradiated with ultra-violet light, acquires powerful antirachitic properties. In the following year[2] they were able to prove that ergosterol is specifically the parent substance of the antirachitic vitamin D. Within a very short time irradiated ergosterol was established beyond question as the most effective agent in the prevention and cure of rickets.

Ergosterol can now be prepared from yeast on a commercial scale, and vitamin D can be produced in almost unlimited quantity and in concentrations many thousands of times stronger than those of the naturally occurring vitamin. To the biologist has come the opportunity of testing the physiological effects of vitamin D more conveniently and more certainly than was ever previously possible, and that these effects can be so profound as actually to excite pathological disturbances in the animal body has become evident. In 1927–28 Pfannenstiel[3] and Kreitmair and Moll[4] described a pathological condition caused in laboratory animals by giving large doses of vigantol (a preparation of irradiated ergosterol produced by Merck of Darmstadt). Some reports of toxic effects ensuing in children from overdoses of vitamin D have also appeared, and consequently misgivings have arisen in some minds about the expediency of allowing the uncontrolled use of irradiated ergosterol. A review of the work which has been published on the subject is on the whole reassuring, for it shows that there is a wide margin of safety between the therapeutic dose of vitamin D and the dose which may prove toxic. Nevertheless it also shows that the drug is a remarkably potent one, exerting its effects from exceedingly minute doses; daily doses of 0·0001 mg. of a standard preparation will cure rickets in the rat in 10 days, while daily doses of 1·0 mg. will kill a rat within three weeks. Clearly, therefore, in deciding suitable dosage for therapeutic purposes both care and knowledge must be exercised.

Pathological Effects in Animals.

Kreitmair and Moll described the pathological effects in mice, rats, guinea-pigs, rabbits, cats, and dogs of giving large doses of vigantol (equivalent to 2–10·0 mg. of ergosterol) per day. The animals lost weight rapidly and developed anorexia and diarrhœa; their coats became roughened, their breathing rapid and laboured, and they died at periods varying from six days to three months. Post mortem they showed massive deposits of calcium salts in the arteries, the kidneys, the heart, the walls of the alimentary canal, and other organs. They showed also a pronounced shrinkage and pallor of the spleen. Confirmatory results have been obtained by a host of other investigators, among whom Harris and Moore[5] succeeded in showing that the toxic effects are specifically attributable to the vitamin, so that the condition may justly be defined as "hypervitaminosis D."

The calcareous lesions have been described in detail by a number of workers, amongst whom are Hücker and Wenzel,[6] Varela, Collazo, Moreau and Rubino,[7] Hoyle,[8] and the present writer.[9] They may appear in the organs of the rat as early as eight days after the first administration of the drug. The earliest calcification usually develops in the kidneys, where precipitation of calcium salts forms casts in the tubules. Local destruction and calcification of the renal epithelium and the surrounding interstitial tissue commonly follows and a focal chronic interstitial nephritis results. In the arterial system the aorta and its larger branches are the first to be affected. Irregular focal calcification of the media occurs, producing a type of lesion which appears to be practically identical with the familiar Mönckeberg sclerosis of the peripheral arteries of man. The calcifying process spreads from the larger to the smaller arteries until almost all, including especially the renal vessels, are involved. The venous system is unaffected. In the spleen there is a striking diminution of pulp cells and a general condensing of the reticulum and connective tissue with shrinkage of the whole organ. Intense hæmosiderosis is a common feature. The lymphoid tissue of the Malpighian bodies is notably diminished, as may also be the lymphoid tissue of the body generally. Atrophy of the thymus has been repeatedly noted. Anæmia is common, and Frazer[10] has described a diminished lymphocyte count. Studying bone formation in the growing animal in hypervitaminosis, Collazo, Rubino and Varela,[11] and Schmidtmann[12] found a premature calcification of growing cartilage leading to a cessation of development. These authors, and also Schoenholz,[13] found that hypervitaminosis D in the pregnant mother led to inhibition of growth and skeletal deformities in the young. The mineral metabolism in hypervitaminosis D has been the subject of much research, and hypercalcæmia and hyperphosphatæmia have been found to be characteristic of the condition.

A number of workers, including Harris and Stewart,[14] Smith and Elvove,[15] Brown and Shohl,[16] Light, Miller, and Frey,[17] Hoyle and Buckland,[18] Watchorn[19] and Ashford[20] have carefully investigated the Ca. and P. metabolism. Although the results do not agree on all points certain conclusions may be drawn from them. There is, in the first place, a tendency to increased serum calcium and blood inorganic phosphorus. There is at the same time a very greatly increased excretion of calcium and phosphorus, especially by way of the kidneys, and this, occurring when the food consumption is diminishing, as is usual in hypervitaminosis D, involves a reduction in the Ca. and P. retention in the body. In view of this the extraordinary accumulation of calcium salts in the tissues is not easily explained. At first vitamin D was thought to influence the calcium metabolism by increasing the absorption of available calcium from the food, but Watchorn's recent work has shown that the percentage absorption of calcium actually tends to fall in hypervitaminosis D, except possibly in the early stages. Opinion now, therefore, tends to ascribe the hypercalcæmia and pathological calcification to a mobilisation of calcium from the bones, as was suggested by Hess, Weinstock, and Rivkin,[21] Light, Miller, and Frey, and others. Possibly, therefore, a substance which aids calcification of bone may also cause decalcification of it when operating in excessive amount. Collazo and his co-workers[11] were, however, unable

to find in the bones any evidence of osteoporosis or resorption running parallel with tissue calcification.

Herzenberg [22] and Watchorn have investigated the ability of animals to recover from the toxic effects of vitamin D after withdrawal of the drug; in Herzenberg's experiments after as much as a 50 per cent. loss of weight from the poisoning. Both find evidence of healing of lesions and of disappearance of the calcium encrustations, but Watchorn finds that restoration of the normal metabolic balance is slow, and that even after nine days there is still grave disturbance. Schiff [23] found no evidence of healing or resorption of calcium from vitamin D arterial lesions.

Dosage.

An unfortunate feature of the experimental work in the past is the great diversity of dosage which has been used and the varying conditions of experiment. The earlier workers computed their dosage gravimetrically in terms of ergosterol. Experience has shown that this method is inaccurate because the amount of vitamin D produced by irradiation of ergosterol varies and depends on technical points which are only now becoming clear. According to Bourdillon, Fischmann, Jenkins, and Webster [24] three substances are successively formed and destroyed in the process of irradiation. The first of these is vitamin D, the second and third—further products of irradiation—are inactive. These authors estimate that the maximum possible vitamin D in any preparation of ergosterol is about 55 per cent. Marshall and Knudson [25] estimate it at 35 per cent. Since, therefore, irradiation destroys as well as produces the vitamin, uniformity of production can only be obtained by a careful control of technique such as has not been observed in the past. Thus, the amount of ergosterol used is no indication of the amount of vitamin D included. The most useful information is given by experiments in which the substance is administered in quantities representing multiples of the antirachitic, or curative, dose in the rat—the rat unit of vitamin D. The antirachitic dose is estimated biologically by feeding young standard rats on a standard rachitogenetic diet for 3–4 weeks and then adding the vitamin in measured doses so as to find the smallest daily dose which will effect healing in ten days. Healing is estimated by calcification of the bones, and it may be detected by radiological examination or by the "line test." For the latter the animals are killed and the radii and ulnæ removed, split longitudinally, and stained with silver nitrate. Calcification is recognised by the formation of a dark line in the metaphysis of the bone.

Cartland, Speer, and Heyl [26] found doses 1000 times the antirachitic dose harmless. Light, Miller, and Frey [17] administered 10,000 times the curative unit daily for six months without causing ill-effects. Klein [27] produced harmful effects in rats by giving 20,000 to 100,000 times the curative dose daily for one month. Tavares [28] caused death (but no calcification of their organs) in mice in 12–14 days by giving 10,000 times the curative rat unit. Bills and Wirick,[29] after a very extensive research in over 1000 rats, with prolonged experiments extending over two and three generations, conclude that 100 times the curative dose daily is harmless, 1000 times is just perceptibly harmful if carried over long periods, while 4000 times is definitely injurious. These figures are not entirely comprehensive, since they do not take into account certain variable factors which may considerably modify the toxicity of vitamin D. Schmidtmann [30] and Rabl,[31] for instance, have shown that a high calcium diet favours the early production of lesions, and Herzenberg [22] has found that a calcium-free diet, while it does not prevent the formation of lesions, appreciably delays it. A series of experiments carried out in the pathological laboratory of the Welsh National School of Medicine,[32] using about 5000 times the curative dose daily, has shown that vitamin D is very much more toxic to rats fed on a synthetic vitamin-free diet of high calcium content than to rats fed on a normal mixed diet of bread and potatoes. Apparently, therefore, as Harris [33] has lately remarked, a high Ca. : low P. diet favours the production of toxic effects of vitamin D.

There is also a possibility that vitamin balance may exercise an influence on the toxicity. Hojer [34] in 1926, reported that large doses of cod-liver oil when given with a diet insufficient in vitamin B produced focal necrosis of cardiac muscle. Harris and Moore [35] reported a similar experience in that they found that a high marmite (vitamin B complex) diet gave an increased tolerance for a vitamin A and D concentrate in the form of cod-liver oil. Kreitmair and Moll,[4] in discussing Hojer's results, suggest that the vitamin D fraction of the cod-liver oil was the one concerned with the production of the cardiac lesions. This would imply that deficiency in other vitamins may contribute in some measure to the toxic effects of vitamin D, but as yet the evidence is not clear on this point. The age and state of the animal can affect the toxicity. Schmidtmann [12] found that young animals stand vigantol better than do older ones, and Collazo and his co-workers [36] found that rachitic animals are more tolerant of high dosage than are healthy ones. Schmidtmann [37] found the toxic effects greater in splenectomised animals, and Haendel and Malet [38] greater in the castrated animal. Again different species show different susceptibilities. The cat, for instance, is much less tolerant of high dosage than the rabbit. Thus, in estimating the toxicity of vitamin D for practical purposes a large number of factors must be taken into account.

Toxicity in Human Beings.

Harmful effects in ten tuberculous children receiving large doses of vigantol have been described by Bamberger.[39] They consisted of loss of weight, vomiting, loss of appetite, the appearance of hyaline casts, blood and albumin in the urine, and a high blood calcium and phosphorus. Gyorgy [40] and Hess and Lewis [41] have reported similar findings with preparations of irradiated ergosterol. Putscher [42] described the finding post mortem in a child which had received 6 drops daily of vigantol of calcification such as is seen in animal experiments. Bamberger and Spranger [43] described parenchymatous nephritis in a child dead from vigantol poisoning. There is evidence enough, therefore, that the therapeutic use of the drug may be carried to a point of danger.

Hess, Poncher, Dale, and Klein [44] have conducted an exhaustive investigation of the effects of viosterol in human infants. Viosterol is the name adopted by the Council of Pharmacy and Chemistry of the American Medical Association [45] for a preparation of irradiated ergosterol standardised in its antirachitic properties by comparison with a certain standard potent cod-liver oil. Viosterol in oil 100 D possesses 100 times the antirachitic potency of the standard cod liver oil. It contains about 1333 curative rat units per gramme. The American Council of Pharmac

have more recently recognised the desirability for a product of a higher potency than the above, and they have accordingly authorised* the marketing of a preparation of viosterol 250 D. Hess and his co-workers conclude that 10 drops daily of viosterol 100 D is the minimum prophylactic dose for infants. They found the optimum curative dose for rickets difficult to assess, for while 15 drops frequently produced healing, 20 drops failed to do so in some cases. Infants on 30 40, 50, and 60 drops daily invariably showed healing, They studied the effect of massive dosage in children, giving 21 to 52 times the prophylactic dose for long periods and 250 times overdosage for short periods and found no injury resulting. The infants on high doses showed abnormally high appetites and were no less lively than others receiving cod-liver oil. Clearly, therefore, there is a wide range of dosage available in vitamin D therapy without approaching the danger limits.

Standardisation.

In this country there has, until recently, been no officially recognised standardisation of the various preparations of irradiated ergosterol which are obtainable. The adjustment of the strength of the preparations issued has been at the discretion of the manufacturers, and the physician has had to depend mainly on the directions issued by the manufacturers in regulating his dosage. Thus the drug has frequently been administered without any precise scientific foreknowledge as to its relative efficiency. The American Council of Pharmacy and Chemistry standardisation of viosterol on the basis of cod-liver oil has been a very valuable measure. It has enabled the American pioneers in this work to determine dosage in terms of a standard which is permanent, and to publish their experiences in terms which are clear to all who are using viosterol. Hess and Lewis,[46] however, criticise the American method of standardisation and suggest that a preferable one is to compute the potency of irradiated ergosterol in terms of protective or curative rat units. Such a method has already been adopted in this country by the British Pharmaceutical Society, utilising the Coward Unit. Coward[47] adopted as a standard a certain preparation of irradiated ergosterol, 0·0001 mg. of which, in daily doses, brings about healing in standard rachitic rats in ten days. Recently the Medical Research Council Committee on Accessory Food Factors[48] have announced their intention of adopting the rat unit and of maintaining a similar standard preparation for general use in assaying preparations of vitamin D in this country. Their antirachitic unit will be defined as the antirachitic potency of a quantity of their preparation corresponding to 0·0001 mg. of the ergosterol used in its preparation. The general adoption of this rat unit as a standard is highly desirable. It will have the invaluable effect of placing all experimental work on a common basis, and enabling experimental and therapeutic work to be more easily and accurately correlated that has been possible in the past.

From what has been said above one cannot but conclude that vitamin D is a therapeutic agent which, in ignorance, may and indeed has been, used dangerously. There is in this country, therefore, a pressing need for the official standardisation of all preparations which are on the market and for an authoritative pronouncement on the proper dosage or therapeutic purposes.

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NEW TUNBRIDGE WELLS HOSPITAL.—It has been decided to rebuild this institution at Culverden, on the outskirts of the town, upon a site commanding wide and beautiful views. The existing building is officially stated to occupy "the worst possible site" for a hospital. There is so much traffic on three sides of it that the windows have to be closed for most of the day, and there is a sawmill immediately behind. Walls and ceilings are crumbling, and the chimney in the women's ward is cracked from top to bottom. There is so little storage room that supplies have to be bought from hand to mouth. Of the 86 beds at least 84 are always full. The new scheme, which provides for 180 beds and includes a nursing home, will cost £160,000, of which £70,000 has already been subscribed.

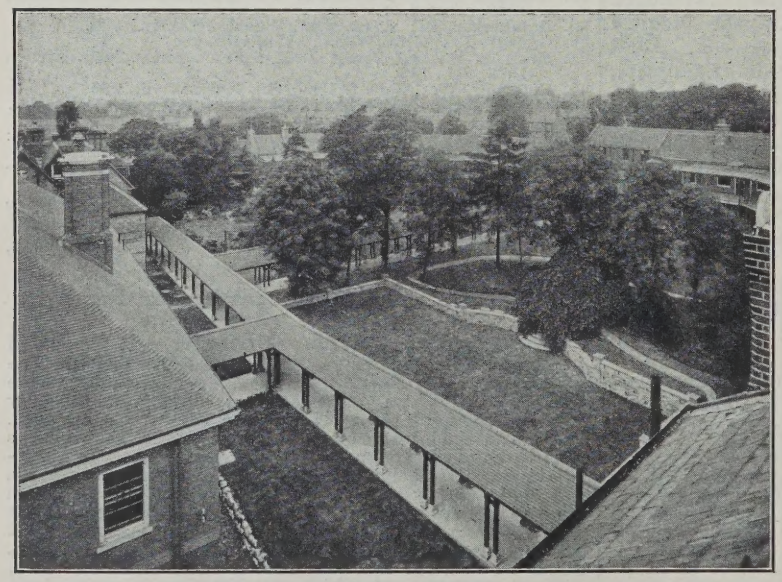
WOODSIDE NERVE HOSPITAL.

THE REFOUNDING OF ST. LUKE'S.

THE opening next Saturday, Nov. 8th, of the Woodside Nerve Hospital at Muswell Hill, N.10, by Princess Helena Victoria, is the outcome of an endeavour on the part of the Governors of St. Luke's Hospital to establish a modern institution, free from official control, for the treatment of those functional nervous and kindred disorders to which, by reason of the stresses of modern life, all classes of society appear to be increasingly subject. The need of a hospital devoted to the rational and scientific treatment of these disorders has been increasingly apparent to every medical practitioner. In order to meet the need, as far as was then possible, the Governors of St. Luke's Hospital established in 1923 two small wards in the neurological department of the Middlesex Hospital, where the results obtained justified the continuance of the experiment. The old St. Luke's Hospital was closed in 1916, when the site in Old-street was relinquished, and the new Hospital for Nerves at Muswell Hill is designed to bring the ancient charity into line with modern needs and methods, the latest forms of scientific treatment, including hydrotherapy and electrotherapy of all kinds, being provided. The hospital will be served by its own specially trained medical and nursing staff. Patients however may be visited and treated by their own medical advisers, should they so desire.

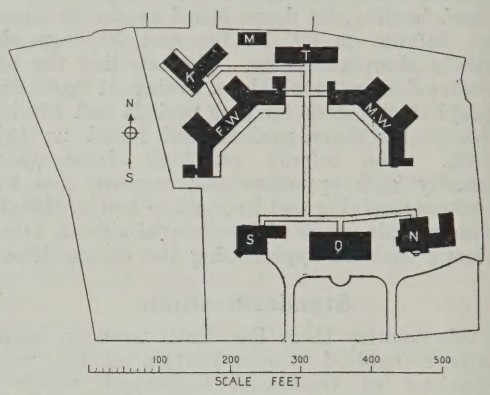
All capital expenditure in building and equipping the hospital has been borne by St. Luke's, whose resources however are unequal to maintaining it. Current expenses will be borne largely by the patients themselves according to their means. The standard fee has been based on the estimated average cost per patient taken over a full complement of beds, and has provisionally been fixed at 5½ guineas a week for those whose circumstances in life would appear to warrant it. Appropriate reductions will be granted at the discretion of the Committee of Governors, so far as the income of the hospital for the time being allows, to the less fortunate of the educated classes for whom it is primarily intended. Application for such reduction, strengthened by a note on the circumstances of the case from the patient's doctor, should be made by or on behalf of the prospective patient to the physician in-charge. In the case of well-to-do patients, fees in excess of the standard fee will be charged, the additional advantages secured being in the nature of private wards or sitting-rooms. The fee for an out-patient consultation at the hospital will not, except in very special circumstances, be less than half a guinea. The fees payable to practitioners who visit their patients to carry on their treatment in consultation with the physician-in-charge will be the subject of private arrangement between doctor and patient.

FIG. 1.



A bird's-eye view of the hospital grounds.

FIG. 2.



The lay-out of the buildings on the site.

The hospital stands in grounds of some 6¾ acres, occupying an elevated situation rising to the north at Muswell Hill, and overlooks Highgate Woods. It is easily accessible by train or omnibus from any part of the metropolis, the time taken in a journey from the centre of London being approximately half an hour. The main entrance is in Woodside-avenue. The grounds, as may be seen from the bird's-eye view (Fig. 1), comprise open lawns and flower gardens, a small bowling green, and a putting green. On the west is room for further expansion, and sufficient space is reserved for the occupation of patients who may be interested in gardening.

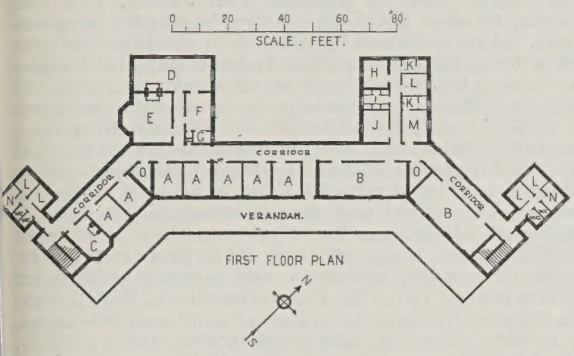
THE BUILDINGS.

The buildings, which all face south, are from the designs of Mr. T. A. Pole, F.R.I.B.A., and have been planned to interfere as little as possible with the woodland character of the site. The centre in the front is occupied by the administration block (Fig. 2. O) which is flanked by two houses that on the east constituting the nurses' home (N), that on the west providing quarters for the matron, a physician, and the domestic staff (S). Behind these three buildings are disposed in a semi-circle

the two ward blocks (F W and M W), which together afford accommodation for 50 patients—30 women and 20 men. Behind the wards, and midway between them, stands the treatment block (T), while to the west of this are arranged the kitchens, stores, and boiler house (K). All the buildings are connected by covered ways, which afford protection to the staff and carry the service pipes.

Each ward-block (Fig. 3) consists of two floors, and is, except as to the number of beds provided therein, practically the counterpart of the other; and in the case of each block the two floors are identical. Each floor comprises bedrooms, dining-room, sitting-room, bathrooms, and examination room. The majority of the bedrooms are single rooms.

FIG. 3.



Plan of the women's wards (first floor plan). A, Single-bed wards. B, Four-bed wards. C, Private sitting-room. D, Dining-room. E, Sitting-room. F, Kitchen. G, Larder. H, Isolation room. I, Linen. J, Sister's room. K, Lavatory. L, Bathroom. M, Examination room. N, Sluice room. O, Store.

Each bedroom is provided with wide folding doors opening directly on to a broad verandah, on to which the bed may conveniently be wheeled. Private sitting-room accommodation is provided. Hot and cold water is laid on to each bedroom, and the bathroom accommodation is ample, one of the baths being adapted for continuous treatment. Large recreation rooms for men, with a full-size billiard table, are provided in another part of the buildings. The furniture has been designed and selected with a view to providing, with as great an economy of space as possible, all that may reasonably be considered necessary or desirable for the comfort and convenience of the patients, the main object being to produce the atmosphere of a home rather than of a hospital.

The treatment block consists of two floors and contains rooms for hydrotherapy, colon lavage, massage, light treatment, electrical treatment and research. In this block also will be found, in addition to the three laboratories, the dispensary, dental surgery, X ray room, photographic dark room, and room intended for occupation therapy.

The kitchen block, having a separate entrance at the back of the site in Grand-avenue, comprises on the ground floor the kitchen, pantries, staff room, store rooms, and linen rooms. Underneath it are situated the boilers which operate the low-pressure hot-water heating system and the domestic hot-water supply to all the buildings of the hospital. These are designed for the consumption of oil fuel, whereby smoke and dirt are avoided.

The out-patients' department, which it is hoped may usefully be developed in the future, is situated in the administration block, and consists of a waiting room and a consulting room, with which are associated two physical examination rooms.

THE STAFF.

The honorary visiting staff consists of:—

Neurologist: Dr. Douglas McAlpine.
Physician: Dr. Charles E. Lakin.
Surgeon: Mr. Eric Pearce Gould.
Gynæcologist: Mr. Comyns Berkeley.
Ophthalmic Surgeon: Mr. Maurice H. Whiting.
Surgeon for Ear, Throat and Nose: Mr. Somerville Hastings.

The physician-in-charge is Dr. R. Withers Gilmour, who has had the care of the wards at the Middlesex Hospital, and his deputy is Dr. Macpherson Lawrie.

Mr. R. J. Hallsall, L.D.S., is dental surgeon, and Dr. F. Gwynne Nicholas radiologist. The chairman of the Governors is Lord Blanesburgh, and three of the Governors are members of the medical profession—namely, Dr. Lakin, Dame Louise McIlroy, and Dr. Henry Yellowlees. The secretary is Mr. W. H. Baird, who may be addressed at 19, Nottingham-place, London, W.1.

LONDON MEDICAL EXHIBITION.

THIS exhibition was well attended until its closure on Friday, Oct. 24th, and the following notes upon some of its prominent aspects are in continuation of those published last week.

J. F. MACFARLAN AND CO. (32, Bethnal Green-road, E.) prominently show on their stall Anæsthetic Ether (Keith's), manufactured from duty-free alcohol, to which no methyl alcohol, pyridine, or wood naphtha has been added, while it is stated to be free from aldehydes, peroxides, acetone, and other impurities; Chloroform Pure B.P.; and Ethyl Chloride, a chemically pure product, put up in 3 and 5 c.cm. ampoules and in 30 and 50 c.cm. automatic tubes. For use as a preliminary to the induction of anæsthesia and of twilight sleep, as well as in obstetric cases, general attention was called to Opoidine, described as opium "made soluble, injectable, and dependable."—From a wide range of preparations shown by MAY AND BAKER, LTD. (Battersea, S.W.), there may be selected for mention: Arthrytin, ammonium ortho-iodoxy-benzoate, in capsules for oral administration, and in powder for intravenous and rectal injection in the treatment of arthritis and neuritis; Calcium Arthrytin, in tablet form, for oral administration in similar cases; Soneryl, butyl-ethyl-malonyl-urea, an hypnotic, analgesic, and sedative in tablet form; and Planocaine (ethocaine), a local anæsthetic suitable for subcutaneous, neural, and spinal anæsthesia, and less toxic than cocaine. A feature was also made of Metarseno-Argenticum, sodium silver metarsenobillon, a coördination product of silver and arsenic, soluble in water, and suitable for intramuscular and subcutaneous injection.—Among the preparations on the stand of ROBERTS AND CO. (76, New Bond-street, W.) attention was particularly asked for Robuval, which is described as an elixir of strontium bromide, with inodorous fluid extract of valerian. As a nerve sedative it is claimed to possess the virtues of valerian and bromide without any of their unpleasant features, while not being narcotic. A feature was also made of Inhalotab Benzoin Co., each tablet of which represents a teaspoonful of friars balsam, one-third of a grain of menthol, and 2½ minims each of melaleucol and oil of pine. The preparation is used for inhalation treatment in bronchial and laryngeal disorders.—The wheaten flour preparation of BENGER'S FOOD, LTD. (Manchester), is too well known to need mention. Other of their preparations may be brought to medical attention, such as Liquor Pancreaticus for partially digesting milk, gruel, and farinaceous foods; Liquor

Pepticus and other preparations of pepsin for aiding the digestion of proteins; peptonised beef and chicken jellies; and pancreatised lentil flour.

G. W. CARNRICK Co. (Vauxhall Bridge-road, S.W.) showed many endocrine products made in their own laboratories, thus securing fresh and healthy glands, and making analysis and standardisation certain. The firm call attention in particular to the success that has attended the use of oral tablets of Trypsogen in cases of diabetes, and has replied to the suggestion of doctors that the effects might be intensified if the tablets were protected from gastric digestion by coating them with Enterosol, which is physiologically inert and will dissolve in the intestine. WILCOX JOZEAU AND CO. (15, Great St. Andrew-street, W.C.) display a variety of Lacteol preparations emanating from Dr. Boucard, Rue Singer, Paris. The ferments are supplied in tablets and ampoules for intestinal intoxication, powders for ulcers, and suppositories for hæmorrhoids. There are also preparations designed for vaginal conditions and for insufflation.—BENGUE AND CO. (24, Fitzroy-street, W.) had a varied display on their stand, in which were included such tried preparations as Menatol, a menstrual tonic; Hemostyl, a highly activated serum to be administered by mouth or rectum in anæmia; Lipiodol, specially indicated for radiological work; and their Ethyl Chloride, in glass and metal tubes and ampoules of 3 and 5 c.cm., for local and general anæsthesia.—THE ANGLO-FRENCH DRUG CO., LTD. (238A, Gray's Inn-road, W.C.), had a comprehensive display of their well-known products: Stannoxyl, Mycolactine, Iodobesin, Orargol. Among their preparations of recent origin may be mentioned Acecoline, pure stabilised Acetylcholine Hydrochloride, recommended as a vasodilator in arterial hypertension; Bacte-Phages, the therapeutic bacteriophages of Prof. d'Herelle; Biocholine, ampoules of choline hydrochloride as used by Prof. Carles and Dr. Leuret in tuberculosis; Emge (Lumière), magnesium hyposulphite in tablets and ampoules, for the treatment of asthma, urticaria, migraine, and other allergic conditions; and Proliferase, a liquid preparation of living and viable yeast cells biologically adapted to proliferate at body temperature.—ARMOUR AND COMPANY, LTD. (St. Martin's-le-Grand, E.C.), had the original idea of displaying a large range of glands preserved in natural colours. To the efficacy of their Glanoid medicinal products, such as splenic extracts and ovarian solution, they are able to produce valuable professional testimony, while they called special notice to the Glanoid extract of liver in treatment of various anæmias, and the Glanoid whole pituitary preparation in dealing with the interesting condition, pituitary obesity.

On the stands of SAVORY AND MOORE, LTD. (143, New Bond-street, W.), associated with JOHN BELL AND CROYDEN (50–52, Wigmore-street, W.), there were prominent, among many pharmaceutical products of these well-known firms, tins of Soluga, a popular nerve food of organic origin containing extracts of calf's liver and red bone-marrow, of thymus gland, and of the spinal cord with Bulgarian Yoghurt, and glucose.—The Bipalatinoids, Cerettes, Cocoids, and Tablets of OPPENHEIMER, SON, AND COMPANY (179, Queen Victoria-street, E.C.), show great ingenuity in devising convenient methods of medication. On the stand also were exhibited the Dimol preparations —pulverettes, powders for lavage, and syrup and ointment, the first three being designed to counteract intestinal infection and the last being recommended in various dermatitic conditions.—FASSETT AND JOHNSON, LTD. (86, Clerkenwell-road, E.C.), distribute many well-known pharmaceutical products which were on display, among them being tablets of Prof. Buergi's Phyllosan Tablets, California Syrup of Figs, and Angier's Emulsion, where the fine division of the fat particles has rendered the preparation popular among doctors.—SANDOZ CHEMICAL WORKS (5, Wigmore-street, W.) direct attention particularly to Femergin (ergotamine tartrate), the preparation and action of which was recently described in our columns by Prof. Arthur Stoll. Femergin is indicated wherever the action of ergot is used in uterine contractions, in so-called functional hæmorrhages of the uterus, menorrhagia, metrorrhagia, disturbances during puberty and the menopause, and in cases of myomatous hæmorrhages. —BRAND AND CO. (Mayfair Works, Vauxhall, S.W.) showed their well-known invalid foods, essences of beef and chicken, meat juice in which the product is so treated that the albumin is retained in an uncoagulated form, and calf's foot jelly, guaranteed to be genuine, and flavoured with lemon, orange, or wine. Other preparations shown were Ferrocarnis, a tonic food in which a pleasantly flavoured solution of iron is in organic combination with concentrated meat juice, and Peptamalt, a new product, which consists of a highly concentrated predigested liquid food prepared from beef and barley malt.—The chief attraction at the stall of MENLEY AND JAMES, Ltd. (64, Hatton Garden, E.C.), was the various Iodex preparations, iodine ointment by itself or in combination with other drugs for various uses. Iodex collapsible bougies for ano-rectal, aural, and nasal work, to reach the deepest orifices, may perhaps be specially mentioned. A display of Neuro-Phosphates (Eskay Brand), a palatable, stable, and easily assimilable form of the acid glycerophosphates, and of Pyridium (phenyl-azo-alpha-diamino-pyridine-hydrochloride), a urinary antiseptic indicated in coccal and *B. coli* infections, demanded particular attention. For Pyridium there is claimed freedom from toxic effects; it is prepared in the forms of powder, ointment, and solution.—MODERN PHARMACALS, LTD. (2, Calthorpe-street, W.C.), were showing Sulfarsenol, the original sulpharsenobenzene, in a wide range of doses from 0·005–0·96 g., which, apart from its value in spirochætal diseases, has been found useful in puerperal infections and erysipelas; Arseno-Solvent, a glucose-saline solvent for sulfarsenol, ensuring painless administration even in concentrated solution; and Biscam, ampoules of bismuth camphorate in ether-washed olive oil, for the treatment of syphilis and yaws, either alone or as an adjunct to arsenicals.—VITAMINS, LTD. (38, Danemere-street, S.W.), exhibited Bemax, a product prepared under medical supervision from the embryo of cereals, which is regularly tested for its vitamin content. This popular preparation is pleasant to the palate, is administered without difficulty, and its mineral adjuncts are of pharmacological value. It is indicated in constipation, depression, debility, and sleeplessness.—At the stand of the GLAXO LABORATORIES (56, Osnaburgh-street, N.W.) there were shown Sunshine Glaxo, a humanised and practically sterile milk food, with added Ostelin vitamin D; Glax-Ovo, a blend of milk, malt extract, chocolate, and Ostelin; and other familiar milk preparations. Particular attention was drawn to Ostelin, a physiologically standardised concentrate of vitamin D, which was shown in several forms. Other exhibits included a highly concentrated solution of vitamins A and D in vegetable oil, enclosed in capsules, Adexolin Capsules; a sterile suspension of colloidal calcium with Ostelin for subcutaneous injection; and a local application for staphylococcal infections of the skin, Staphylococcus Antivirus, which is prepared from a number of virulent strains isolated from purulent lesions.

COATES AND COOPER (41, Great Tower-street, E.C.) showed on one stand the products of the Battle Creek Food Co., and called especial attention to Lacto-Dextrin, employed for influencing intestinal flora, and Psyllium Seed, whose physical properties make of them a useful colonic stimulant. On another stand they displayed the products of the Dr. Joachim Wiernik and Co., of Berlin, among which may be noted Pacyl, a derivative of cholin; Presoiod, an isotonic iodine solution, and Paraphakin, a combination of endocrine glands. The last preparation is recommended by Prof. A. Siegrist, of Berne, in the treatment of senile cataract. The same firm act as

agents for the Bio-chemical Laboratories (Locarno, Switzerland), the producers of Disulphamin; and the Gomenol Laboratories (Paris), where Gomenol, a natural antiseptic oil, is manufactured by Prof. Bertrand, technical director of the Pasteur Institute.—H. W. BRAUN (16, Water-lane, Great Tower-street, E.C.) was showing as agents for N. V. Organon, of Holland, certain organic therapeutic preparations, of which the one they particularly desired to recommend was Ovarnon. This is a preparation of fresh ovaries indicated in deficiency of the ovarian secretion, that is to say, in the menopause or after ovariotomy, and its action has been much reported on in continental medical papers.—NESTLÉ AND ANGLO-SWISS CONDENSED MILK CO. (6–8, Eastcheap, E.C.) showed a series of illuminated transparencies, to remind visitors of the merits of Lactogen, a dried full-cream cow's milk; their milk-food in powdered form; and other of their popular productions.—COW AND GATE, LTD. (Guildford, Surrey). The milk-food and chocolate-milk of the firm were displayed on three stands. The milk powders have been recommended by many pædiatricians, and appreciated by those who conduct appropriate clinics; the new blend of chocolate-milk is specially designed for nursing mothers.—The DENVER CHEMICAL MANUFACTURING CO. (London, E.) exhibited their hydroscopic, antiseptic poultice, Antiphlogistine, which is in daily use by doctors in the treatment of inflammatory and congestive conditions, where continuous moist heat, osmosis, and surface stimulation are indicated.—KOLYNOS, INC. (Chenies-street, W.C.), showed their antiseptic and non-gritty dentifrice, Liquid Kolynos, which is used as a mouth wash, gargle or spray; a powder for cleaning artificial dentures; and a denture fixative, a new preparation, for holding artificial teeth firmly and comfortably in position.

The coffee product shown at the stall of BANTAM PRODUCTS, LTD. (9, Queen Victoria-street, E.C.), was favourably commented upon by us quite recently (THE LANCET, 1930, i., 1272). It is not a coffee essence, but the soluble portion of the coffee bean in granular powder form, which dissolves in hot or cold water without "grounds."—From NUJOL LABORATORIES (Albert-street, Camden Town, N.W.) the medical profession receives two adjuvants to treatment, Nujol and Mistol. Nujol is a standardised intestinal lubricant, and its popularity will be increased by the reduction in its price. Mistol is a combination of menthol, camphor, chlorbutol, and eucalyptol, with a mineral oil, and, used through an atomiser or with a dropper, has proved useful in nasal catarrh and hay-fever.—PETROLAGAR LABORATORIES, LTD. Braydon-road, N.). The "Petrolagar" brand of paraffin emulsion is produced in three varieties, the Plain, the Alkaline, and Phenolphthalein. This mechanical emulsion of pure liquid paraffin and agar-agar is in constant request in the treatment of colitis, peptic ulcer, and constipation, particularly that accompanying pregnancy.—The two prominent features of the stall of PEARSON'S ANTISEPTIC CO., LTD. (61, Mark-lane, E.C.), were Iodine-Medol and Creolin (Hycol). The first-named is a non-toxic and non-irritant antiseptic ointment, containing iodine per cent. and Creolin 5 per cent., in a rapidly absorbed non-lardaceous base. It has been used for burns, chilblains, insect bites, and bacterial and parasitical skin affections, while it has also proved of value in psoriasis. An important claim for the preparation is that it can be applied to denuded surfaces without producing escharotic effects. Creolin, which prepared from highly refined coal tar, and has a Rideal-Walker coefficient for *B. typhosus* 18–20, has low toxicity, and has been used in oral sepsis, for gynæcological and genito-urinary irrigation, as well as instrument sterilisation.

On the stand of F. C. CALVERT AND CO. (Gibbon-street, Bradford, Manchester, and 5–6, Australian-avenue, London, E.C.), were carbolic preparations which are household words, their range including medical, toilet, and domestic preparations, disinfectants (fluid and powder), ointments, and dentifrices.—WRIGHT, LAYMAN AND UMNEY, LTD. (44–50, Southwark-street, S.E.), showed their coal tar soap and lysol, both of which well-known preparations are produced and manufactured in an up-to-date manner, and can be relied upon to fulfil what is claimed for them.—C. R. HARKER, STAGG AND MORGAN, LTD. (Emmott-street, London, E.), had on their stall a range of Petrolax preparations. Petrolax is an emulsion of liquid paraffin and agar-agar, which has been proved to keep indefinitely, and contains 65 per cent. of pure liquid paraffin of remarkably high viscosity.—SCHERING, LTD. (3, Lloyd's-avenue, E.C.), made prominent in a wide range of preparations Veramon, which has now been on the market for nearly a decade as a useful analgesic. In some cases it may replace or defer the use of morphine, while it has proved of use in dysmenorrhœa, and to give relief in many cases of post-operative pain. Medinal, a stable and non-cumulative hypnotic, the quick absorption and rapid elimination of which is implied by its solubility, also received prominence, as well as the well-known Atophan for rheumatic and gouty affections. The antiphlogistic and analgesic qualities of this drug also render it of value in forms of neuritis.—At the stall of CHARLES ZIMMERMANN AND CO. (CHEMICALS), LTD. (9–10, St. Mary-at-Hill, E.C.), attention was called to Asthmolysin (Weiss), a suprarenal pituitary compound, standardised, and indicated in the treatment of acute and chronic bronchial asthma for hypodermic use. Lobelin ("Ingelheim"), a sterile solution of the hydrochloride salt of the alkaloid Alpha-Lobelin, was also shown; this exerts a specific action in difficult breathing and respiratory paralysis.—H. R. NAPP, LTD. (3 and 4, Clements Inn, W.C. 2), exhibited a large number of medical preparations: Normacol, a substance of vegetable character stated to contain no paraffin, agar-agar, or psyllium seeds, but to induce peristalsis by supplying emollient bulk in the bowel; Anzypan, a product containing all the digestive enzymes put up in the form of a double tablet, and so constructed that the gastric ferments are released in the stomach, and the pancreatic enzymes and gall are disintegrated in the bowel; and Somnosal, described as a sedative-analgesic-soporific free from barbiturates and opiates, and harmless if taken over extended periods.—The exhibit of EVANS, SONS, LESCHER AND WEBB, LTD. (56, Hanover-street, Liverpool; 50, Bartholomew-close, London, E.C.; and Evans Biological Institute, Runcorn), demonstrated the wide field of pharmaceutical and biological products manufactured by the firm. The most recent addition to their medical specialties is Collozin, a colloidal zinc hydroxide, the nature of the preparation enabling the active constituent to come into close contact with the skin, while leaving no visible deposit. This drug is indicated as a lotion in eczema, urticaria, as a sunburn lotion, and as a protective on exposure to the wind.

(To be continued.)

A MEDICAL OFFICERS' HOSTEL.—Additions to the out-patients' department and a new resident medical officers' hostel in connexion with Bristol Royal Infirmary were opened recently. The hostel, with its furniture, has cost £10,500. Besides a dining-room and a lounge it contains four sitting-rooms and 23 bedrooms.

POSITION OF HEREFORDSHIRE GENERAL HOSPITAL. The board of management of this institution state that two of the wards are so insanitary as to be dangerous to nurses and patients. In the course of the last two years the buildings have been extended at a cost of £34,000, most of which has been provided. The working of the last six years has resulted in a deficit of £24,492, notwithstanding that, thanks to the contributory scheme, the income in 1929 increased by £4844. The expenditure, however, increased by £6434. It has been decided to raise a fund for the building of isolation and pathological blocks and, if possible, a new surgical wing which would have the effect of supplanting the two condemned wings.

PUBLIC HEALTH SERVICES

NOTE ON THE OUTBREAK OF SMALL-POX IN MERSEYSIDE.

By W. HANNA, M.D., D.P.H.,
DEPUTY MEDICAL OFFICER OF HEALTH, CITY AND PORT OF LIVERPOOL.

DURING recent years small-pox has shown a tendency to increase in prevalence in England and Wales as may be seen from the quarterly returns of the Registrar-General.

TABLE I.

Year.	Cases.	Deaths.	Year.	Cases.	Deaths.
1924	3,792	13	1927	14,769	49
1925	5,365	9	1928	12,433	53
1926	10,205	19	1929	10,975	39

The slight decrease in 1928 and 1929 has not been maintained during the present year, the figures for the first nine months of which have already reached the total for 1929. This increase has been due to a recrudescence in the London area, for small-pox in the north of England (Tyneside and Durham) has declined. In the north-west, outbreaks have recently occurred at Ellesmere Port 140 cases (Feb., 1928–June, 1929) and Skelmersdale, 38 cases (Nov., 1929–April, 1930). Since that time small-pox has been absent from this area in epidemic form.

Small-pox has shown a good deal of variation in severity; the mild type which has in recent years appeared in various district, has been, in fact, so mild that many believe it to be a fixed variant from the true or normal small-pox. The outbreaks in Ellesmere Port and Skelmersdale were of this non-virulent type. Case after case, either vaccinated or unvaccinated, was of an extremely mild character. The majority of the patients were unvaccinated and those vaccinated in infancy only showed evidences of disease after the usual immunity had disappeared.

In the more recent epidemics of small-pox the lower fatality-rate is evident (Table II.), the deaths occurring at each age-period showing marked differences, depending on whether the patients were vaccinated or not. From Government returns for the years 1923–26, out of 21,000 cases of small-pox

TABLE III.—SMALL-POX CASES ON MERSEYSIDE.

Case.	County borough.	Date of admission to hospital in 1930.	Age.	Vaccination and re-vaccination.	Infected by—	Onset and character of disease.	Type.	Result.	Remarks.
A.	Wallasey.	—	60	Infancy, two small and very faint; revacc. at 29 years, three good marks.	Unknown source.	Ill June 29th. Rash July 3rd. Supposed "influenza." Papules, head, wrists, and other parts.	Mild discrete.	Recovery.	Mild and unrecognised case. Vaccination history shows that patient was revaccinated at age 29 before going to S. Africa; 30 years afterwards he developed this mild attack of virulent small-pox.
B.	,,	July 17th	57	Infancy, four (⅜ sq. in.).	A. (wife of A.).	Onset July 12th. Vomiting and malaise. Rash 15th. Profuse but scattered.	Moderate discrete.	Recovery.	—
C.	,,	July 19th	33	Infancy, one (⅜ sq. in.) faint.	A. (patient stayed at A.'s house from May till July 7th).	Onset July 15th. Flushed, high temp. Rash 18th. Papular rash and purpuric spots.	Toxic and hæmorrhagic.	Death July 23rd, 1930.	Rash was slow in developing; cyanosis developed; marked injection of conjunctivæ, subcutaneous hæmorrhages, and toxic condition. Toxic and severe case. Death three days from appearance of rash.
D.	Liverpool.	July 24th	57	Infancy, one (¼ sq. in.), one (⅜ sq. in.).	A. (visitor to house).	Onset July 19th. Headache and shivery. Rash 23rd. A fair eruption.	Mild discrete.	Recovery.	Patient visited A.'s house on July 5th. Eruption first appeared on face.
E.	Birkenhead.	Sept. 3rd	50	Infancy, two (⅜ sq. in.).	Unknown source.	Onset Aug. 27th. Rash 30th. Well-marked rash on face, body, and extremities.	Moderate.	Recovery.	Patient was not at work from onset. He infected two persons in own house and neighbour before illness was discovered by report of medical attendant.
F.	,,	Sept. 14th	33	Infancy, two (¼ sq. in.). Revacc. Sept. 3rd.	E. (wife of E.).	Onset Sept. 9th. Headache and backache. Rash 13th. Well-marked large papules.	Moderate.	Recovery.	Concurrent small-pox and vaccinia.
G.	,,	Sept. 15th	22	Infancy, two (⅜ sq. in.). Revacc. Sept. 3rd.	E. (son).	—	Very mild discrete.	Recovery.	Concurrent small-pox and vaccinia.
H.	,,	Sept. 17th	20	Unvacc.	E. (next door neighbour).	Onset Sept. 13th. Rash 16th. Vomiting and headache. Eruption very marked and confluent over body. First appeared on face and wrists.	Very severe. Completely confluent.	Recovery.	Patient was on holiday, too ill and travelled home by train, rash coming out on Sept. 16th. He passed through a most severe attack, made a strenuous fight, and ultimately recovered.

in north and mid-England, the following information is of interest:—

TABLE II.

4038 Cases of Small-pox (Vaccinated)—

28	under 15 years	no deaths.
392	„ 15–30 years	1 death.
3618	over 30 years	3 deaths.*

* Two over 70 years.

17,718 Cases of Small-pox (Unvaccinated)—

10,709	under 15 years	17 deaths.
5,296	„ 15–30 years	1 death.
1,713	over 30 years	2 deaths.*

* One over 70 years.

At the present time there are two distinct and different types, one of a high degree of virulence and usually imported from the East and Africa; the other of extreme mildness which may have come to us from the United States where this type of disease has been present for many years. Even in the United States there have been from time to time outbreaks of the more severe form, presumably due to importation from outside of a more virulent strain. In the Detroit outbreak of 1924, for instance, there was a total of 795 cases and 105 deaths.

The Merseyside area has been free from small-pox in epidemic form for some considerable time, and it may be opportune to record the few cases of apparently virulent type which have recently developed in this area and have been treated at the New Ferry isolation hospital.

The first case was that of a cotton-sampler who fell ill about the beginning of July, 1930, but was not recognised to be suffering from small-pox; he is stated to have attended a doctor for influenza. This patient did not go to work after the first day of his illness, and for at least three weeks subsequently. The rash was scattered over body, hands, and face, and when seen, the remains of the staining were evident. This patient infected his wife and two other persons, one of whom died from hæmorrhagic and toxic small-pox. After an interval of about two months another group of four cases developed in the neighbouring borough with one very severe confluent case (unvaccinated) amongst them.

The present outbreak in Merseyside seems to be of the virulent type. The patient C. died three days from the appearance of the eruption. The vaccination area was faint and small, and as a result his vulnerability was high. The case was of the hæmorrhagic and toxic type. Case H. (unvaccinated) was of the confluent type, the whole body from head to foot being a mass of eruption, which after a few days pustulated; when secondary fever occurred the patient's life was in jeopardy, but fortunately careful nursing and treatment brought about his recovery. He was also of an age when the fatality is low. These two groups of cases of small-pox occurred within a short time of one another in the two adjacent and thickly populated areas, and seem to point to the fact that the later cases in Birkenhead were derived from those in Wallasey by the intermediary of some unrecognised case.

The methods adopted by the medical officers of health were as follows—viz., prompt vaccination and revaccination of contacts (who may not in many cases be easily ascertained), the supervision of these for the usual period, personal examination of contacts by the medical officer, together with house-to-house visitation. As in times past, these have had the effect of bringing the disease under control. The extensive maritime trade of this country renders it very liable to importations of the virulent form of small-pox and the necessary facilities for dealing with them should be in constant readiness. The risks of importation are increased by the rapid passage of vessels from port to port and the long incubation period of the disease. No system of port sanitary administration, however efficient, can prevent the possibility of such importations taking place.

HOSPITAL ACCOMMODATION FOR INFECTIOUS DISEASE.

THE Minister of Health has instructed county councils (other than London) to survey the hospital accommodation available in their counties for the treatment of infectious disease. In an accompanying memorandum it is stated that experience has shown that a large hospital serving a wide area forms a more satisfactory administrative unit than a number of smaller hospitals serving smaller areas, and with modern means of transport the removal of patients to a hospital situated at some distance from their homes presents little difficulty. It is suggested, therefore, that each county council should consider whether it would be desirable to close any small hospitals which are found not to be satisfactory, and to enlarge those hospitals which are satisfactory in all respects and can conveniently be extended and made to serve a wider area.

"It is particularly desirable," says the memorandum, "that, in the course of their survey, the county council should explore the possibility of further coöperation with the councils of county boroughs. In some cases it may be found that the additional accommodation required for some part of the county could most economically be provided by the enlargement of an existing hospital belonging to a county borough council, and it is, therefore, suggested that, where such conditions appear to exist, the county council should . . . consult with the council of the county borough as to the possibility of such an enlargement being undertaken and as to the terms on which the new accommodation could be made available for the inhabitants of the county."

When the survey has been completed, the county medical officer is to make a report to the council with a view to the preparation of a scheme. The report should review the existing accommodation and arrangements as disclosed in the survey, and make recommendations as to which hospitals should continue to be used with or without enlargement or alteration, what additional hospitals are required, and what (if any) alterations should be made in the areas served by existing hospitals. In this connexion the Minister calls attention to the growing need for the provision of hospital treatment for complicated cases of measles, influenza, pneumonia, whooping-cough, and the acute infectious diseases of the central nervous system.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED OCTOBER 18TH, 1930.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 125 (last week 44); scarlet fever, 2290; diphtheria, 1568; enteric fever, 50; pneumonia, 728; puerperal fever, 42; puerperal pyrexia, 123; cerebro-spinal fever, 11; acute poliomyelitis, 21; acute polio-encephalitis, 6; encephalitis lethargica, 8; continued fever, 1; dysentery, 16; ophthalmia neonatorum, 106. No case of cholera, plague or typhus fever was notified during the week.

The large number of small-pox cases reported this week more than counterbalance the small number of last week. Of the total of 125, 33 were reported from the county of London and the remainder from the following 9 counties: Durham, 3 (Jarrow); Essex, 42 (of these West Ham 23, Barking Town 13); Kent, 1 (Margate); Lancaster, 3; Leicester, 27 (C.B. 19, Blaby R.D. 7); Lincoln (Lindsey) 10 (Caistor R.D.); Middlesex, 1 (Hendon); Yorks (West Riding), 4; Monmouth, 1.

The number of cases in the Infectious Hospitals of the London County Council on Oct. 21st–22nd was as follows: Small-pox, 154 under treatment, 3 under observation (last week 140 and 4 respectively); scarlet fever, 1708; diphtheria, 2066; enteric fever, 23; measles, 95; whooping-cough, 112; puerperal fever, 17 (plus 5 babies); encephalitis lethargica, 121; "other diseases," 38. At St. Margaret's Hospital there were 12 babies (plus 2 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns including London there was no death from small-pox, 1 (0) from enteric fever, 6 (0) from measles, 2 (0) from scarlet

fever, 9 (0) from whooping-cough, 27 (4) from diphtheria, 85 (28) from diarrhœa and enteritis under two years, and 46 (5) from influenza. The figures in parentheses are those for London itself.

It is worthy of note that during the week in London no death was attributed to small-pox, enteric fever, measles, scarlet fever, or whooping-cough. One fatal case of small-pox omitted from the return for the week ended Oct. 11th was assigned to Hackney (Met. B.). The fatal case of enteric fever outside London occurred at Luton. Liverpool reported 2 deaths from measles. Birmingham and Liverpool each reported 3 fatal cases of diphtheria, Bootle and Salford each 2. Diarrhœa accounted for 10 deaths at Liverpool, 6 at Birmingham, 2 each at Croydon, Edmonton, Nottingham, Manchester, Preston, and Sunderland.

The number of stillbirths notified during the week was 245 (corresponding to a rate of 36 per 1000 births), including 46 in London.

DEATH FROM SMALL-POX.

The fatal case of small-pox referred to above was that of a woman, aged 59, who was removed to hospital on Sept. 26th. The disease was of the mild type. Death occurred on Oct. 3rd, the cause being certified as (1) (*a*) pneumonia, (*b*) small-pox. Dr. G. H. Dart tells us that a post-mortem examination was carried out, and it is doubtful whether there was not also a cerebral condition present as a secondary cause of death.

CORRESPONDENCE

LAXATIVES AND COLITIS.

To the Editor of THE LANCET.

SIR,—I regret that I have not seen until return from abroad Dr. Green's letter in your issue of Oct. 4th. In the meantime Dr. Graham-Stewart has replied to several of the points raised. I can assure Dr. Green that the use of liquid paraffin was not put forward in my remarks at Winnipeg as "the medical remedy of election in ordinary cases of constipation," and I shall have pleasure in sending him a copy of the paper in full when it is published. Diet, exercise, and the practice of a proper habit are of greater importance than the use of paraffin. Such measures with, and often without, the aid of paraffin, have, in my experience, led to regular actions in the great majority of constipated persons. They call for initial care and attention in their application to each person; it is also well to know what is the type of constipation and in which part of the bowel the delay lies.

It is, as Dr. Green implies, easier to prescribe one of the cascara group of drugs. But that course is not in the interest of the patient. For any aperient depending for its action upon irritation tends to do away with the need for a daily habit and effort, with normal exercise of the muscle of the bowel, and the skeletal muscles and nervous reflexes employed in defæcation. Paraffin makes the work of the bowel muscle a little easier. It is not an aperient to be taken in varying amount from day to day. When once the least daily amount needed has been determined, any increase or lessening should be tested for several days at a time, with no sudden change. Seepage can be prevented by simple measures, in the following order: (1) adjusting the dose; (2) taking paraffin (*a*) in warm milk night and morning; (*b*) with food (though it is generally better, as advised by Dr. Graham-Stewart, to take it apart from meals); (*c*) in the form of jelly; (*d*) as an emulsion with some non-digestible substance such as agar-agar.

With Dr. Green's second point, that there are persons whom paraffin does not suit, I am, of course, in agreement, though these become rare if care be taken to adjust the time and the dose. The thesis that "paraffin, being an indigestible, insoluble hydrocarbon, must cause a thin film covering the absorptive mucous surfaces of the intestine" and the "particles of food"—thereby interfering directly with the digestion of foodstuffs, raises points of interest which have been mentioned in the medical[1] and lay press of late and in advertisements of other laxatives. In man, when doses of paraffin from ½ to 1 oz. per day are given, the oil is, as a rule, not present as a separate film, but emulsified in the fæces. This we have found by routine microscopical examinations extending over many years. Excess of paraffin forms a casing or is passed separately after the motion. In experiments on white mice, by E. Schlagintweit, of Munich, it was found[2] that "sections from the stomach and all parts of the bowel showed the paraffin emulsified extremely finely throughout the whole fæcal mass." The softening action was ascribed to its power of holding water in the emulsified form, the stools containing 15 per cent. more water than usual. These findings were confirmed in mice by S. Loewe,[3] who showed also that with a larger dose a film of oil would appear over the fæcal mass. In the emulsified form—e.g., with agar-agar—double the amount would mix with the fæces without the formation of a casing of oil. The amounts given were comparable to human doses of one to two tablespoonfuls a day.

As regards the alleged adverse influence of paraffin upon nutrition, in the human clinical experiment of absorption tests, paraffin and all medicaments are, as a rule, purposely withheld. We have, however, two such three-day tests, made by my colleague, Mr. A. J. Leigh, B.Sc., in which liquid paraffin was present in the fæces. The results obtained were as follows:—

No. 2426, April, 1924. This patient was taking a tablespoonful of liquid paraffin twice a day, but missed some doses. The fæces contained 11 per cent. of paraffin.

	Per day.		Per day.
Food fat	85 g.	Food nitrogen	13·3 g.
Fæcal fat (true) ..	3·5 g.	Urine ,, ...	9·8 g.
		Fæcal ,, ...	1·2 g.

Food fat absorbed = 96 per cent.
N. balance +2 g. per diem.

No. 2731, March, 1925. In this case the paraffin was given in the form of jelly, one teaspoonful four times a day. The fæces contained 17 per cent. of paraffin.

Food fat .. .. .. 61 g. per day.
Food nitrogen .. .. .. 11·7 g. ,, ,,
Food fat absorbed = 95 per cent.
N. balance +3 g. per diem.

In these cases, therefore, absorption was not impaired. I can avouch also, from observation of large numbers of cases, that the ingestion of paraffin, in moderate doses, does not, on the one hand, prevent a steady increase of weight in cases of subnutrition; and, on the other hand, that it is useless as a method of reducing weight unless the patient is also being dieted. Like Dr. Green, I have not so far recognised a case of wasting as having been due to its action.

I am, Sir, yours faithfully,

EDMUND SPRIGGS.

Ruthin Castle, North Wales, Oct. 27th, 1930.

To the Editor of THE LANCET.

SIR,—I do not doubt that the régime described by Dr. Graham-Stewart would be effective in constipa-

[1] See Brit. Med. Jour., 1930, i., 478 and 567.

[2] THE LANCET, 1927, ii., 688.

[3] Klin. Wochenschr., 1929, viii., 1850.

tion. Nevertheless, this is no remedy for general practice. The average constipated patient requires something that is not only effective but simple. His ideal is to swallow his simple dose or tablet last thing at night or first thing in the morning, and the instruction to take paraffin plus adjuvants half an hour, or more, before meals would not appeal to him. He could not afford regularly to take expensive remedies. Dr. Graham-Stewart says that he has known only three or four patients unable to take paraffin. But between being absolutely unable to use a remedy and finding it undesirable there is a big gap which, when bridged, leads to a large number of patients with countless more or less reasonable objections. A patient may realise that he could, if he wished, put up with the disadvantages of paraffin, but would justifiably ask why he should when there are other remedies to be had that do not cause like trouble. The action of paraffin, I find, is very variable, sometimes producing too efficient evacuations, sometimes the reverse, and often disappointing completely. It is certainly not a drug to rely on for regular daily time for defæcation. It appears to stagnate in the stomach and sometimes in the cæcum, rendering the musculature reflexly atonic. At other times in the same individual it stimulates violent peristalsis, and may cause continuous intestinal unrest which is fatiguing to the nervous system. Perhaps this explains why Dr. Graham-Stewart regards it as possessing "no kick." The adjuvant he suggests to supply this deficiency has the disadvantage that in some individuals it causes griping and tenesmus. I should not be surprised to learn that it contains, in addition to the published constituents, a small quantity of aloes or similar purgative. I submit that if paraffin is used and an adjuvant is necessary the best drug is cascara. The use, when indicated, of belladonna and bromide, seems desirable. One other point. It is widely accepted nowadays that bulk and roughage in the diet are beneficial in constipation. This is not altogether in accordance with my clinical observations. The primary defect in constipation appears to be in the neuro-muscular mechanism controlling peristalsis in the stomach and small intestine and mass movements in the colon. I find that these movements are not necessarily stimulated by either a bulky or a rough residue. On the contrary, they appear sometimes to be adversely affected thereby. An efficient colon will work well with a small residue; an inefficient colon may be severely embarrassed by a larger or a more irritating residue.

I am, Sir, yours faithfully,

South Tottenham, N., Oct. 19th, 1930. L. J. GREEN.

To the Editor of THE LANCET.

SIR,—Whilst thoroughly agreeing with Dr. Graham-Stewart in the main part I notice that he makes no mention of the use of agar-agar to impart the necessary "kick" to liquid petrolatum. I have found an emulsion of these two, with the addition of phenolphthalein in small quantities for acute stasis, or a suitable alkali for cases of gastritis, dyspepsia, or colitis, as in the varieties of an emulsion of Petrolagar, to facilitate re-education in serious cases of bowel defect. I have seldom heard of a patient using such a preparation complain of seepage, and never of ineffectiveness or harmful result from its use.

I am, Sir, yours faithfully,

J. H. ADDISON, M.R.C.S. Eng.

Watford Way, Hendon, N.W., Oct. 28th, 1930.

A MEDICAL SERVICE FOR THE NATION.

To the Editor of THE LANCET.

SIR,—It is regrettable that sentimental considerations should be permitted to obscure the issue so ably presented by Dr. Geoffrey Evans. Dr. Evans has faced the situation in stating boldly that a large proportion of the nation are not economically worth individual medical attention. With each decade, as Dr. Joules points out, diagnosis and treatment become more costly; but also with each decade there is an increase in the number of economically worthless members of the State preserved to become a burden upon the rest of the community. It cannot be maintained, as Dr. Layton lays down, that at birth all are equal. The mentally defective is born with fewer neurones than the normal baby. The factors of heredity must influence very largely the potentialities for disease, irrespective of environment. There can be no doubt that there is taking place a relative increase of physically and mentally inferior people.

What is the attitude of the medical profession to be to this problem? Is it willing to burden itself with the task of individual service to this ever-increasing body? Does it really pretend that it can afford to give to these patients the same medical attention as to those patients who pay for services rendered? If the profession does undertake the work, will there be any time left over for research? The ideal of service will always be maintained in the profession, irrespective of remuneration, but it is, above all things, a personal ideal. Each man has his own code, his own ethic. It is impossible to impose a collective ideal on a body of men comprised of the most different types. An underpaid service, such as the extension of the panel system to dependants is bound to be, must mean the imposition of a compulsory philanthropy on a body of men who, however willing, are economically unable to maintain it.

The nation must be prepared to cut its losses in this direction as in others. We must realise that at present it is not a financial possibility to make the offer of the luxury of individual service to those members of the State of whom the majority absorb considerably more than they contribute.

I am, Sir, yours faithfully,

Bristol, Oct. 24th, 1930. FRANK BODMAN.

RECRUITMENT FOR NURSING.

To the Editor of THE LANCET.

SIR,—Dr. Carling's letter in your issue of Oct. 11th will, I hope, receive the attention it deserves. The present shortage of nurses and the future outlook in that direction must be seriously considered. The General Nursing Council are quite alive to the difficulties of the situation, but if these are to be surmounted expeditiously that body will need, and can rightly demand, the help of the medical profession. The more distinguished members of our profession, to whom we look for leadership, are not so much apathetic to the situation, but have as yet hardly realised it. The big teaching hospitals, where most of their work lies, can still command a supply of probationers, and have not yet felt the pinch.

Remuneration seems to be at the root of the problem. A nurse must serve an apprenticeship of a severity unparalleled in any other profession, involving tremendous personal sacrifices as well as the hardest physical work, and at the end of it, save for the lucky few, there is a mere pittance of a salary

as a reward. During this three years of hard nursing training an attempt is made to cram her unprepared and tired brain with a grade of anatomy, physiology, medicine, and surgery that the medical student with several years' special preparation finds it hard enough to assimilate. During a recent tour in Canada I found that a certificated nurse doing staff nurse duties commanded a salary of 80 to 90 dollars a month—more than twice as much as an English nurse can expect. Might one not suggest that a nurse who has passed her State registration examination should be able to expect some such reasonable salary as this? Those who could not, or did not wish to, reach that standard of efficiency should be content with smaller rewards. This would make nursing a reasonable profession for a woman to choose, and with this goal in view the candidate for State registration might be content with a longer period of training on more humane and less frenetic lines. At the end of which she would find herself properly qualified and not merely, as Miss Carter says in your issue of Oct. 25th, "overtired in body and mind, with insufficient knowledge to be the doctor's right hand."

Until we have a proper training and adequate salaries for nurses we shall never attract either the quantity or the quality of women that we so sorely need. I am, Sir, yours faithfully,

Frimley, Oct. 27th, 1930. R. C. WINGFIELD.

CANCER RESEARCH ON MAN AND ANIMALS.

To the Editor of THE LANCET.

SIR,—The possibility of transferring certain aspects of the cancer problem to animals was the dream of the early workers, who of necessity were physicians and surgeons. That it is now a specialised discipline is inevitable, like the separation of priest and doctor that preceded it. Those most deeply engaged in the problems of cancer may be permitted to attribute the slowness of practical results in part to the inherent difficulties of the subject, a point of view which troubles Mr. Hastings Gilford very little. That the impatience of those on the clinical side of cancer research is very real is evidenced by the repeated emergence of methods of treatment which do not withstand the test of time. Very few of these come from the laboratory investigator of cancer in animals—disproof is too rapid for them to gain headway.

The repercussion among laymen in favour of quack remedies and philosophical prophecy is intelligible, and on a little reflection these short cuts to finality and intellectual peace can be regarded with sympathy.

I am, Sir, yours faithfully,

Queen-square, W.C., Oct. 24th, 1930. J. A. MURRAY.

THE ALKALOIDS OF ERGOT.

To the Editor of THE LANCET.

SIR,—In a recent publication [1] we recorded that we had been unable to obtain ergotamine or ergotaminine from official ergot—i.e., ergot of rye—although ergotoxine and ergotinine were isolated without difficulty.

Prof. Stoll in the letter which he contributed to your issue of Oct. 18th attributes our inability to obtain ergotamine from official ergot to the use of faulty methods of extraction and isolation, but in view of the fact that we effected the isolation of ergotamine and ergotaminine from unofficial ergots, this explanation is inadequate. Prof. Stoll has given the same explanation elsewhere [2] in the case of previous workers who also obtained only ergotoxine and ergotinine from ergot of rye, and we naturally tested the efficiency of our technique.

We extracted ergot with ether and separated the alkaloids from the ether solution as usual. By dissolving any of the ergot alkaloids in the alkaloid-free ether solution and adding the ether solution to the exhausted ergot we reconstituted an ergot containing known amounts of alkaloid. By then applying Kraft's process [3] we were able to check the efficiency of the extraction. If we added ergotamine we could recover ergotamine practically without loss and without conversion to ergotaminine. The reported isolation by Forst [4] of ergotamine in addition to ergotoxine to which Prof. Stoll refers is not convincing, since Forst offered no satisfactory evidence for the identification of ergotamine. We repeated Forst's process when it appeared and obtained only ergotoxine and ergotinine.

In our original paper we state that "during the past few years we have examined many commercial specimens from Spain, Portugal, Russia, Poland, Scandinavia, Hungary, and Czecho-Slovakia, all of which gave ergotoxine and ergotinine and these alkaloids only." Nevertheless, in spite of this extensive examination, Prof. Stoll writes that "it is of course quite possible that Smith and Timmis did not have any official ergot rich in ergotamine at their disposal." If Prof. Stoll will indicate any commercial source of ergot of rye rich in ergotamine we shall be pleased to complete our examination by including ergot from such source.

At present we have no final explanation to offer of the differences between Prof. Stoll and ourselves, but two may be suggested. It is possible that rye may occasionally, or possibly regularly in some districts, be infected by a distinct species of *Claviceps* which gives rise to ergotamine, whereas the normal infection *Claviceps purpurea* gives rise to ergotoxine. The second suggestion is that, during a process of manufacture, ergotoxine may be converted to ergotamine. Chemical, pharmacological, and physical evidence show that the two alkaloids are closely related, and it is not improbable that such a conversion can be effected.

Since Spiro and Dale have shown that ergotoxine and ergotamine are pharmacologically identical, everything Dr. Stoll says about the clinical virtues of the one must apply with equal force to the other.

We are, Sir, yours faithfully,

SYDNEY SMITH,
G. M. TIMMIS.

Wellcome Chemical Works, Dartford, Oct. 25th, 1930.

[1] Journ. Chem. Soc., 1930, p. 1392.

[2] Die Naturwissenchaften, 1923, xxxiii., 705.
[3] Arch. Pharm., 1906, ccxliv., 336.
[4] Arch. Exp. Path. Pharm., 1926, cxiv., 132.

SUNDERLAND WAITING-LISTS.—There are 240 beds in Sunderland Royal Infirmary, and the waiting-list contains 723 names. To the children's hospital, with 68 beds, 151 children are awaiting admission. The infirmary has a debt to the bank of £12,700.

DURHAM CENTRAL PUBLIC ASSISTANCE HOSPITAL.—A conference of representatives of the Durham county council and the medical and surgical staffs of the voluntary hospitals has decided to establish a standing joint hospitals conference for the county, and has agreed in principle to the creation of a central public assistance hospital. It was officially stated, on behalf of the county council, that a careful survey of the poor-law hospitals transferred to the council showed that, with one possible exception, all are obsolete and incapable of being adapted to present-day requirements.

OBITUARY

WALDEMAR HAFFKINE, C.I.E.

THE death is announced of Prof. Haffkine, formerly bacteriologist to the Indian Government, which occurred at Lausanne on Oct. 26th, in the seventy-first year of his age.

Waldemar Mordecai Wolff Haffkine was born in 1860, in Odessa, and received his early classical education at the Berdiansk Gymnasium, proceeding thence to the University of Odessa, where he graduated in the Science Faculty in 1884. For the next four years he was attached to the zoological museum of his native town. Through the circumstances of parentage and residence, and through his great intellectual capacity, he was already an accomplished linguist when, in 1888, he became assistant to the professor of physiology in the University of Geneva. He discharged there professorial duties for the only time in his career. But his stay in the Swiss medical school was short, for one year later he was invited by Pasteur to be his assistant in Paris. Until 1893 he was engaged under Pasteur in bacteriological research, and by that date, when he was invited by the Government of India to devise methods for the arrest of cholera, he was already a marked man. In India his first work was conducted at the new Government Research Laboratory at Bombay, now known as the Haffkine Institute. Here he brought his arduous training and scientific imagination to bear almost at once upon the problems with which his name will ever be associated. In the laboratory of the Pasteur Institute he had worked out a scheme of preventive inoculation, and before proceeding to India he explained his theory with demonstrations of his technique in a series of lectures at Netley, and at the laboratories attached to the Examination Hall of the English Conjoint Board. At Netley he gave demonstrations of his method of inoculating with a modified cholera virus as a protective, the work having been done in Paris in collaboration with Prof. Roux. A detailed communication to the Royal Colleges, where the experiments were repeated by Sims Woodhead, then director of the laboratories, showed at once that in certain directions the method of treatment promised to be of great value. It was stated at the time that the cost of the investigations to be undertaken in India were being largely defrayed by private generosity.[1]

Shortly after arrival in India Haffkine made a pilgrimage with the object of testing the procedure entailed by his theories, and the way in which British residents in India, especially the officers of the army and the medical officers, offered themselves as subjects for the treatment, greatly encouraged the natives to follow suit. It was not long before some trustworthy evidence as to the practical value of the work was forthcoming, but opportunities for testing rigorously large populations were infrequent (fortunately), and for some time it was difficult to decide on the merits of the procedure. However, in the course of five years, a good number of authoritative reports came to hand, pointing to the efficacy of inoculation in reducing both the attack rate and the case mortality of the disease.

In 1896 the disastrous epidemic of plague in India led the Government to entrust Haffkine with the preparation of a vaccine against that disease, in view of his discoveries with vaccine as a preventive of cholera. The work was immediately commenced, and its results and extension were regularly reviewed in the medical and scientific press. In 1900 the Indian Plague Commission reported thoroughly on the whole matter, found that the use of the vaccine was attended with a diminution of the attack- and death-rates, and the establishment of a temporary protection, while the final recommendation of the Commissioners was that, under safeguards and in conditions of accurate standardisation and absolute care, the procedure should be encouraged wherever possible, and in particular among disinfecting staffs and the attendants of plague hospitals. A series of fatalities occurred in 1902 which for the time cast a suspicion upon the methods of manufacture of the prophylactic, but inquiry into the actual incidents made it clear that the tragedies were due, not to carelessness in the laboratory, but to a gross neglect of ordinary precautions in administration. That the activity of the Indian authorities in proceeding without break in inoculation against plague on a large scale was in no way unabated can be seen by the results of 30,000 cases of inoculation which were published in THE LANCET shortly afterwards. The review of these cases by Dr. C. P. Forsythe, who had been employed by the Punjab Government in carrying out a large scheme of inoculation, was published in THE LANCET at the end of 1903, and indicates well the difficulty in arriving at reliable statistics in India. The fact of disease, the diagnosis, and the fact of death, all had to be left to village registrars, and although the lists under the first and last headings were probably accurate, proof of the identity of the condition with plague was not always forthcoming, though the lists must have been substantially correct here owing alike to the obvious nature of the symptoms and the familiarity of the registrars with them. But although inoculation proceeded, Haffkine's control of the work had been suspended by the India Office, and he remained unemployed until he received through that Office a communication from the Secretary of State recording a view favourable to him of the origin of the Mulkoval disaster and offering him terms of employment in India. These were immediately accepted. The sufferer in a prolonged dispute who obtains a verdict in the end is never repaid for his anxiety, but throughout his period of trial Haffkine bore himself with the greatest dignity; he received many congratulations upon the recognition which he finally received from the India Office and upon his resolution to return to India. To-day the verdict on Haffkine's labours which is generally accepted is that the vaccine, when used in an epidemic, tends to reduce mortality by 85 per cent. What this means when we consider the millions of doses that were issued in India can hardly be conceived.

Until 1915 Haffkine remained as director-in-chief and officer in charge of the Biological Laboratory at Calcutta, when he resigned and took up his residence in Paris.

Sir Walter Fletcher has supplied the following interesting note: "The last direct service Haffkine gave to this country was in the late months of 1915. At that time 90 per cent. of the British Forces in Flanders and France had voluntarily received protective inoculation against typhoid infections, but no paratyphoid protection had been available for them.

[1] See THE LANCET, Feb. 11th, 1893, p. 307 et seq.; p. 316 et seq.

Meanwhile, part of the Forces in the Mediterranean had had the advantage of combined protection against typhoid, paratyphoid A, and paratyphoid B. In view of the entry of troops from India into France and the transference of divisions from the Mediterranean to the western fighting areas, it was increasingly urged that "A" and "B" vaccine should be added to the "T" already supplied to the Forces in France. Sir William Leishman, then Director of Pathology to the Expeditionary Force, had opposed immediate action on the ground that the inoculation reactions, if made more severe, might impede the swiftness of military reinforcements and movements in the field, and might disturb the statistical collection of results in France which were still needed for scientific, military, and political reasons. Sir Alfred Keogh recalled Leishman on short leave from France, where he had been immersed since the outbreak of war in his great work for the Expeditionary Force, and appointed him to a Committee under the chairmanship of Sir David Bruce, of which the other members were Captain (now Sir Frederick) Andrewes, Lieut.-Colonel (now Sir Andrew) Balfour, and myself. The Committee met at Millbank on Nov. 15th, 1917. The evidence supplied by Captain Andrewes and Colonel Balfour was supplemented by that of Colonel (now Major-General) David Harvey and Prof. Dreyer, while Dr. Haffkine by historic right came as a kind of neutral assessor. Leishman was convinced by the evidence brought before him and the arguments based upon it, and agreed to the immediate use of T.A.B. vaccine for the Forces in France and all other areas, if, in an experiment, the use of the triple vaccine in given dosage for 300 men at Millbank produced no undue reactions. In my opinion, this was in great measure due to the quiet influence of Haffkine, who strongly supported the views represented by Andrewes and Balfour. I made a report of this meeting to the Director-General, changing the word "experiment" into the word "trial." He accepted it, the trial was arranged at once, and the new T.A.B. vaccine was first issued for use in all areas in January, 1916. Haffkine had, of course, always been a great name to me, but I never met him except within that hour in which he gave this last service."

Haffkine received the C.I.E. in 1917, and thereafter lived in such retirement that some few years later the Indian Government were trying to locate him. But in 1925 his name came before the public in a manner that must have been extremely gratifying to him, for in that year, by a resolution of the Government of Bombay, the name of the Bacteriological Laboratory at Bombay was definitely changed to the Haffkine Institute, and with universal approval.

The close of Haffkine's life was spent on the continent. He accepted membership of various English, French, American, and Indian associations, and made contributions to Russian, French, and Dutch periodicals. His literary output was mostly confined to the studies in which he had spent his life, but he became also deeply interested in Jewish racial and religious questions. He was unmarried.

MEDICAL NEWS

Royal Colleges of Physicians of London and Surgeons of England.

AT the Final Examination of the Conjoint Board held from Sept. 30th to Oct. 22nd, the following candidates were approved in the subjects indicated, but are not eligible for the diplomas of the Colleges:—

Pathology.—J. S. Barker and R. J. V. Battle, Cambridge and St. Thomas's; Jessie G. Belilios, King's Coll.; C. M. Bell, St. Bart.'s; W. D. Bell, Cambridge and St. Bart.'s; G. F. Benjamin, Liverpool; C. C. Beresford, London; J. F. E. Bloss, St Thomas's; Doris Boon, Royal Free; W. H. Bradbeer, Guy's; A. I. P. Brown, London; N. P. Bruce, Charing Cross; A. M. Cantor, Guy's; E. F. Claridge and A. J. P. Coetzee, London; H. A. Constable, Guy's; G. T. Cook, Cambridge and King's Coll.; R. D. Darley, Univ. Coll.; J. O. F. Davies, Middlesex; B. Fine, London; J. Finer, Middlesex; A. C. Frazer, St. Mary's; L. Freeman, St. Bart.'s; R. J. Furlong, St. Thomas's; J. R. Gilmour, London; J. T. Griffiths, Univ. Coll.; E. B. Grogono, London; G. W. Hall-Smith, Cambridge and Guy's; D. C. Harris, Middlesex; G. F. C. Harvey, Manchester; F. J. V. Jaensch, St. Bart.'s; J. L. S. James, Bristol; N. M. James, King's Coll.; J. E. Jenkyn-Thomas, Cambridge and St. Bart.'s; C. D. P. Jones and Henrica A. Kellgren, Univ. Coll.; G. D. Kersley, Cambridge and St. Bart.'s; N. R. C. Lansdell, King's Coll.; R. A. Q. Lay, Guy's; C. H. Levick, Sheffield; D. L. Lewis, Cambridge and St. George's; D. T. Lewis, St. Mary's; W. F. McGladdery and R. M. Marshall, St. Bart.'s; Halle Marsten, Charing Cross; R. W. Maxwell, Univ. Coll.; W. J. Morris, Liverpool; I. Moshinsky, Guy's; G. G. Mowat, Cambridge and St. Thomas's; D. H. Murphy, Sheffield; R. W. C. Murray, Cambridge and Birmingham; J. E. A. O'Connell, St. Bart.'s; C. E. S. Oxley, St. Thomas's; H. C. Pickering, London; Doris Rees, Royal Free; E. T. Renbom, St. Bart.'s; C. H. Rogerson and C. Rutter, Guy's; A. G. Sanders, St. Thomas's; Mary A. Saunders, King's Coll.; E. Sharp, Guy's; D. A. Smith, St. Bart.'s; J. H. Spence, St. Thomas's; A. M. Stewart-Wallace, Univ. Coll.; D. Stone, Guy's; N. V. Storr, St. Thomas's; R. A. Sykes and M. Westwood, Cambridge and St. Bart.'s; E. W. M. Williams, Guy's; Mary J. Wilmers, King's Coll.; and R. B. D. Wright, St. Mary's.

Medicine.—Margaret Abernethy, Royal Free; E. S. Asiedu Ofei, Birmingham; Gwendolen E. Austin, King's Coll.; Margaret H. Banks, Royal Free; N. J. Bee, London; A. R. Clarke, Guy's; P. Cohen, St. Bart.'s; F. Cort and S. T. Cowan, Manchester; R. P. Dalal, M.B., Bombay; R. R. Davies, Univ. Coll.; G. G. M. Edelsten, St. Bart.'s; B. E. Fernando, L.M.S., Middlesex; Lena Finkelstein, Charing Cross; D. G. Gower, Cambridge and Westminster; R. W. Graham-Campbell, Cambridge and St. Bart.'s; E. W. Hardman, Manchester; Joan E. Harwood, Charing Cross; J. R. Heming, St. Thomas's; Blaguigna Illitch, Royal Free; Esther P. W. Jones, Charing Cross; B. W. Knight, St. Bart.'s; R. F. Legge, M.D., McGill; Ethelberta M. Lynton-Low, Royal Free; I. More, Univ. Coll.; W. H. Mylechreest, Cambridge and St. Thomas's; Emilata Nawalkishore, M.B., Royal Free; S. Rajapaksa, King's Coll.; E. T. Renbom, St. Bart.'s; G. J. Roberts, M.B., Edinburgh; H. W. Rodgers, St. Bart.'s; R. H. D. Short, Univ. Coll.; H. Simpson, Manchester; R. B. Sutcliffe, Guy's; Jessie A. Thirtle, Royal Free; R. L. H. Townsend, London; D. Trimble, Birmingham; R. S. Wale, King's Coll.; J. H. Way, Leeds; J. L. Wild, Cambridge and St. Thomas's; and Mary J. Wilmers and W. G. Wright, King's Coll.

Surgery.—R. C. Abel, Univ. Coll.; A. T. Andreasen, St. Bart.'s; W. Aukin, Univ. Coll.; S. Barigrasser, St. Bart.'s; H. B. Barker, St. Mary's; A. J. W. Beard, St. Bart.'s; C. E. Bevan, Cambridge and St. George's; K. Biden-Steele and E. T. Blacklee, Guy's; M. Blashka, Charing Cross; J. F. E. Bloss, St. Thomas's; A. D. Bourne, St. Mary's; G. D. S. Briggs, St. Bart.'s; H. Canwarden, St. Mary's; L. P. B. Chamberlain, St. Bart.'s; J. M. P. Clark, Leeds; J. L. S. Coulter, Bristol; I. Culank, Middlesex; G. J. Cunningham, St. Bart.'s; H. E. B. Curjel, St. Thomas's; A. Cursham, Cambridge and St. Thomas's; M. K. Cusack, St. Bart.'s; R. D. Darley, Univ Coll.; D. M. Dean, St. Bart.'s; L. E. A. Dearberg, Guy's; G. A. Desai, L.M.S., Bombay and London; J. M. Erskine-Young, Liverpool; L. P. J. Evans, Cambridge and St. Bart.'s; Mary Evans, King's Coll.; B. E. Fernando, L.M.S., Middlesex; A. C. Fraser, Cambridge and St. Bart.'s; R. J. Furlong, St. Thomas's; L. T. Furnivall, St. Mary's; K. H. Gaskell, Cambridge and King's Coll.; W. F. T. George, St. Bart.'s; W. G. Glassco, McGill and St. Mary's; J. B. Great Rex, L. J. Hackett, H. T. Halper, and W. H. Hargreaves, St. Bart.'s; K. Harris, Guy's; F. T. J. Hobday, Cambridge and Bristol; G. M. Holliday, M.B., Leeds; G. Holroyd, Leeds and Guy's; E. E. R. Hopkin James, Cambridge and Cardiff; D. T. Ishmael, St. Bart.'s; D. W. James, Guy's; E. Johnson, Manchester and Univ. Coll. E. Jones, St. Thomas's; J. A. Kersley, Bristol; M. H. Khan, Durham; L. E. D. Knights, Middlesex; H. P. Lal, M.B., Edinburgh; N. Langdon-Down and C. S. Lewis, Cambridge and London; G. A. M. Lintott, Guy's; A. W. Littlewood, St. Mary's; G. G. Ludgater, London; J. O. McCarter, Manchester; A. P. McEldowney, Cambridge and St. Thomas's; R. W. McNabb, Guy's; S. F. Marshall, St. Bart.'s; R. H. Moore, Bristol; M. J. O'Donnell, L.D.S., Guy's; Angela M. S. A. Ofenheim, King's Coll.; H. J. C. Page, St. Mary's; H. C. Pickering, London; J. H. Pierre, St. Bart.'s; W. H. Poole, Cambridge and London; D. Y. Richardson, Durham; P. M. G. Russell, Univ. Coll. P. G. Scott, Cambridge and St. Bart.'s; A. Shafi, M.B., Charing Cross; H. Silverberg, Middlesex; R. N. C. Smith, Guy's; L. R. C. South, London; H. W. G. Staunton, St. Bart.'s; A. P. Stokes, King's Coll.; N. V. Storr, St. Thomas's; J. W. Summerhayes, Cambridge and King's Coll.; G. Walker, London; R. G. Wilbond, Bristol; G. M. Willey, King's Coll.; R. N. P. Williams, Cambridge and St. Bart.'s; Mary Wills, Cardiff; D. Wilson, St. Mary's; and Edna M. Wilson, Charing Cross.

Midwifery.—R. E. Adam, St. Thomas's; Marjory Archer, Westminster; T. J. Ashley, Bristol and Cardiff; J. S. Barker,

Cambridge and St. Thomas's; J. S. Batchelor, New Zealand and Guy's; R. J. V. Battle, Cambridge and St. Thomas's; A. S. Baxi, Punjab; K. Baxter, Manchester; W. S. Baxter, St. Bart.'s; H. W. Benham, Univ. Coll.; C. C. Beresford, London; D. R. Bharucha, M.B., Bombay and St. Bart.'s; C. H. Blewett, Middlesex; H. Bloom, Guy's; M. Bloom, Manchester; H. W. Boake, Cambridge and St. Thomas's; J. D. Bright-Richards, Liverpool; A. I. P. Brown, London; Elizabeth C. M. Brunyate, Univ. Coll.; Joan Butterworth, Royal Free; A. B. Carter, Cambridge and St. Thomas's; P. H. Charlton, Middlesex; M. H. Churchill, St. Bart.'s; I. Cohen, King's Coll.; J. G. Connell, Cambridge and Sheffield; C. M. Connolly, St. Thomas's; F. Cort, Manchester; E. J. Currant, Cambridge and London; A. Cursham, Cambridge and St. Thomas's; F. M. Day, St. Mary's; D. M. Dean, St. Bart.'s; L. E. A. Dearberg, Guy's; J. R. Duffield, Cambridge and Westminster; K. V. Earle, Cambridge and St. Thomas's; E. St. J. C. Emerson, St. Mary's; D. Erskine, Guy's; L. P. J. Evans, Cambridge and St. Bart.'s; Mary Evans, King's Coll.; A. C. Frazer, St. Mary's; J. R. Gilmour, London; J. T. Griffiths, Univ. Coll.; E. B. Grogono, London; E. A. Gudgeon, St. George's; Hilary S. M. Hadaway and Kathleen M. L. Hall, Royal Free; H. T. Halper, St. Bart.'s; Elizabeth M. Handfield-Jones, Royal Free; D. C. Harris, Middlesex; Honor E. C. Harvey, Royal Free; D. S. Hayes, St. Bart.'s; L. C. Holland, Bristol; G. M. Holliday, Leeds; E. T. Hudson, Manchester; G. N. Humphreys, Cambridge and St. Mary's; W. Hunt, Cambridge and St. Bart.'s; B. Illitch, Royal Free; D. T. Ishmael, St. Bart.'s; A. L. Jacobs, Univ. Coll.; F. J. V. Jaensch, St. Bart.'s; C. D. P. Jones, Univ. Coll.; D. E. V. Jones, King's Coll.; Esther P. W. Jones, Cardiff and Charing Cross; I. O. Jones, Guy's; G. D. Kersley, Cambridge and St. Bart.'s; D. H. Klugman, Guy's; L. E. D. Knights, Middlesex; N. L. Lamb, Cardiff and Guy's; G. F. Lashmore, Guy's; C. H. Levick, Sheffield; C. S. Lewis, Cambridge and London; D. L. Lewis, Cambridge and St. George's; J. W. S. H. Lindahl, Cambridge and St. Thomas's; J. Littlejohn, St. George's; G. G. Ludgater, Cambridge and London; J. R. B. McBride, St. Bart.'s; A. B. MacEwan, Cambridge and London; G. J. McFarlane, St. Thomas's; S. A. MacKeith, St. Mary's; J. W. Macmillan, Cambridge and St. Thomas's; I. Magdi, M.B., Cairo; G. Malone-Lee, St. Thomas's; W. H. Mason, Middlesex; W. A. Mayne and T. P. Mulcahy, Cambridge and St. Thomas's; Lois M. Munro, Royal Free; D. Nagarajan, L.M.S., Madras; J. E. A. O'Connell, St. Bart.'s; Doris Onions, Leeds; Elizabeth S G. Owen, Bristol; E. Palmer, Cambridge and King's Coll.; J. L. Parker and W. R. Parkes, Cambridge and St. Thomas's; C. G. Patel, M.B., Bombay; R. McI. Paton, St. Thomas's; M. R. Potter, Leeds; D. R. Prem, Bombay and King's Coll.; C. F. Price, Univ. Coll.; G. O. S. Reid, St. Mary's; G. J. Roberts, M.B., Cardiff and Edinburgh; N. L. Rusby, Oxford and St. Thomas's; D. N. Ryalls, Sheffield; I. N. Samuel and P. C. Sanyal, M.B., Middlesex; E. M. Sastry, Andhra; J. Scholefield, Leeds; P. G. Scott, Cambridge and St. Bart.'s; A. Segil, Guy's; J. H. Shakespeare, Cambridge and St. George's; E. G. Sibley and H. Silverberg, Middlesex; D. G. Snell and R. G. W. Southern, St. Thomas's; J. H. Spence, Cambridge and St. Thomas's; Gladys M. Spencer, Cambridge and King's Coll.; A. A. Screenivasan, Bombay and Charing Cross; F. R. Staub, Leeds; W. G. Stanford, Guy's; R. A. Sykes, Cambridge and St. Bart.'s; J. T. C. Taylor, St. Bart.'s; E. J. Walsham, St. Thomas's; A. R. Walters, Middlesex; E. D. Ward, Cambridge and St. Thomas's; M. Westwood, Cambridge and St. Bart.'s; J. C. Wharton, Guy's; G. A. W. Whitfield, Cambridge and Univ. Coll.; Eva M. M. Willett, Westminster; E. L. Williams, Univ. Coll.; V. F. F. Winslow, St. Bart.'s; and Dorothy Woodman, Royal Free.

University of Edinburgh.

On Oct. 25th, after the installation of Sir James Barrie, O.M., as Chancellor of the University, the following diplomas were conferred :—

D.P.H.—Katharine H. Aitchison, J. M. Davidson, Martha Keith, R. J. A. Lavoipierre, David Lees, I. F. Macleod, Barbara K. Nicholson (in absentia), Jean Sutherland, and Helen A. Wright.

University of London.

On the recommendation of the School Committee of University College Hospital Medical Board the Graham Scholarship in Pathology, for two years, has been conferred on Dr. C. L. Oakley. Mr. A. F. Watson, Ph.D., has been awarded the Laura de Saliceto studentship.

University of Aberdeen.

Dr. William Gilbert Evans has been appointed McRobert lecturer in malignant disease, and radium officer at Aberdeen Royal Infirmary. Dr. Evans is, at present, senior resident medical officer at Mount Vernon Hospital for Cancer.

College of Physicians of Philadelphia.

Alvarenga Prize.—The next award of this prize, amounting to about 300 dollars, will be made on July 14th, 1931. Essays on any subject in medicine will be considered, provided they have not appeared in print in any form, and have not been presented elsewhere in competition for a prize. They must be in prescribed form and must be received by the secretary of the College by May 1st.

The Alvarenga prize for 1930 has been awarded to Dr. Henry A. Harris, assistant professor of anatomy at University College, London, for an essay on Cod-liver Oil and the Vitamins in Relation to Bone Growth and Rickets.

Pharmaceutical Society of Great Britain.

At a meeting of this Society to be held at 17, Bloomsbury-square, London, W.C., at 8.30 P.M., on Tuesday, Nov. 18th, Mr. Wilfred H. Linnell, Ph.D., will lecture on the Purity, Standards, and Tests of Medicinal Substances.

Royal Sanitary Institute.

At the Field Laboratories, Milton-road, Cambridge, at 10.30 A.M. on Saturday, Nov. 15th, Prof. J. Basil Buxton, F.R.C.V.S., and the staff of the Department of Animal Pathology of the University, will give a demonstration on Recent Research in Connexion with Animal Tuberculosis.

Lectures on Diseases of Children.

A course of lecture-demonstrations on Diseases of Infancy and Childhood will be given at St. John's Hospital, Morden Hill, Lewisham (Station: Lewisham Junction), by Dr. John Gibbens, at 4.30 P.M. on alternate Mondays, from Nov. 3rd onwards. Practitioners, senior students, and nurses are invited to attend.

Congress of Military Medicine.

The Sixth International Congress of Military Medicine and Pharmacy will be held at The Hague from June 1st to 6th, 1931. The principal subjects will be: the recruitment and training of military doctors and pharmacists; the psychoneuroses of war; hæmostasis on the battlefield; the preparation and conservation of ampoules of drugs used in the services; the sequels of war trauma of the teeth and mandible. Further information is obtainable from the Director of Health Services of the Ministry of War at The Hague.

International Hospital Congress.

The second International Congress will be held at Vienna from June 8th to 13th, 1931. The subjects for discussion are hospital building costs, nursing, hospital terms and definitions, auxiliary hospital activities, hospital laws, cost of maintenance of patients, dispensaries, nutrition, effect of health insurance on hospital practice, and the place of neurology and psychiatry in the general hospital. British, Danish, and German hospitals will be visited before the Congress, and afterwards the members will go on to Budapest. Application should be made to Prof. Tandler, chief of the welfare and health service of the city, at 9, Rathausstrasse, Vienna.

Courses at Maudsley Hospital.

A course for candidates for a Diploma in Psychological Medicine will begin at the Maudsley Hospital, Denmark Hill, London, S.E., on Jan. 6th. The lecturers and demonstrators will be Dr. F. Golla, Capt. S. A. Mann, Prof. W. le Gros Clark, Mr. Charles Geary, Dr. Henry Devine, Dr. Edward Mapother, Sir Hubert Bond, Dr. J. S. Harris, Mr. R. Foster Moore, Dr. Bernard Hart, Dr. William Moodie, Dr. F. C. Shrubsall, and Dr. W. Norwood East. There will also be a concurrent series of clinical lectures as follows: six by Dr. Thomas Tennent on Nervous Disorders in Children; six by Dr. Aubrey Lewis on the Origin and Significance of Symptoms; and six by Dr. Mildred Creak on the Neuroses. Inquiries should be addressed to the Director of the Central Pathological Laboratory at the hospital.

Children's Hospital at Bexhill.

At Bexhill, on Oct. 22nd, the Duke of York opened an annexe at the Little Folks' Home at Little Common, the seaside branch of the Queen's Hospital for Children, of which he is president. The annexe is the gift of Sir James Carmichael, and provides additional wards for ten more children, increasing the available beds to 46. The Duke, in reply to an address, expressed his pleasure at being associated with another great act of generosity on the part of Sir James, and referred with gratitude to a gift of £500 from Mr. Philip Agnew to endow a bed in memory of his son, a former member of the hospital committee.

A National Maternity Service.

On Oct. 24th the Minister of Health received a deputation from the standing joint committee of the National Women's Organisation. The deputation, which was introduced by Miss Marion Phillips, M.P., urged the importance of early steps being taken by the Government to set up a national maternity service, and stressed the desirability of full control of such a service by the health authorities. The Minister said, in reply, that he proposed to approach local authorities immediately, and urge upon them the importance of an improvement and extension in their present maternity services. He also said that he intended to discuss with the local and other authorities affected, including the doctors and those concerned with health insurance, the question of a national scheme; but it had to be realised that these discussions would inevitably take time.

New Pharmacy Laboratories at Manchester.

The new Wooley Laboratories for Pharmaceutical Chemistry and Galenical Pharmacy at the University of Manchester were formally declared opened on Oct. 22nd. These laboratories have been equipped entirely by the Wooley family at a cost of £3000. Mr. Neathercoat, past president of the Pharmaceutical Society of Great Britain, in declaring the laboratories open, said he believed they were the best pharmaceutical laboratories in the country.

Dublin University Biological Association.

The annual opening meeting of this Association was held at Dublin on Oct. 25th, when Dr. Leonard Abrahamson, the President-Elect, gave an address on Some Recent Advances in Diseases of the Heart. He was followed by Dr. F. W. Price (London), who referred to the high position occupied by heart diseases in the statistics of mortality, stated that they were becoming more frequent, and expressed the opinion that the greater frequency was due to the strain of modern life. Prof. H. F. Moore, University College, Dublin, spoke at some length of the need for research in medicine in the Dublin school. He pointed out that, of all the great advances in clinical medicine in the last decade, not one of any magnitude had come from Ireland. The winning of a place among the free nations of the world brought with it certain moral responsibilities, and the organised study of disease was one of these. Discussing methods by which research might be financed, he suggested that of the funds which certain hospitals expected to receive as the result of sweepstakes, at least 5 per cent. might be earmarked to finance studies directed toward the discovery of better methods for the diagnosis and treatment of disease. He drew attention to some of the advantages of the Dublin methods of medical education, but put in a plea for greater coördination in clinical teaching, without, however, sacrificing individuality for too much standardisation. He mentioned the help that had already been given in Ireland by the Rockefeller Foundation, and suggested plans by which further assistance might be obtained. Prof. T. G. Moorhead, in proposing a further resolution, spoke of the advantage to the Association and to medical education in the University of Dublin which should result from the admission of women to the membership of the Association. He put in a caveat against too great reliance on elaborate apparatus in the diagnosis of heart disease, and maintained that the essentials of diagnosis were attainable by the four fundamental methods of inspection, palpation, percussion, and auscultation. Dr. D. E. Bedford (London) discussed various problems arising from heart disease, and in particular devoted attention to coronary thrombosis.

Medical Diary

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Nov. 4th.—5 P.M., ORTHOPÆDICS. Presidential Address: Mr. Jenner Verrall: Some Amputation Problems. A discussion will follow. 8 P.M., PATHOLOGY: Laboratory Meeting at the Bland-Sutton Institute of Pathology, Middlesex Hospital, W. Demonstrations: J. McIntosh and R. W. Scarff: Some Factors in Antibody Production. L. E. H. Whitby: Anaerobic Infection of the Gall-bladder; *Sporotrix beurmanni*. A. C. Counsell: Odontomes. L. W. Proger and E. G. Muir: Pathological Specimens. D. H. Patey: The Histological Appearances of Some Tumours after Irradiation. S. L. Baker: Two New Transmissible Fowl Tumours. E. C. Dodds: Apparatus for the Determination of the Basal Metabolic Rate of Small Animals. F. Simer: Monometric Determination of the Respiratory Quotient on a Single Tissue Slice. (The last two demonstrations will be given at the Courtauld Institute of Biochemistry.)

WEDNESDAY.—5 P.M., HISTORY OF MEDICINE AND ODONTOLOGY. Paper: Mr. F. N. Doubleday: History of Dentistry. 8.30 P.M., SURGERY. Presidential Address: Mr. C. H. Fagge: The Aims and Limitations of Surgery. A discussion will follow.

THURSDAY.—2 P.M., LARYNGOLOGY. A Cinematographic Demonstration will be given by Dr. Eastman Sheehan (U.S.A.) on Plastic Operations on the Face, at which members of the Section of Surgery are specially invited to be present. Illustrative cases will be shown by Sir Harold Gillies during this demonstration. 5 P.M., SEMON LECTURE: Mr. V. E. Negus: Some Observations on Semon's Law. 8 P.M., TROPICAL DISEASES. Dr. E. C. Smith (Nigeria): Cultivation of the Spirochætes Associated with Tropical Ulcer.

FRIDAY.—10.30 A.M., OTOLOGY. (Cases at 9.30 A.M.) Presidential Address by Mr. Alexander R. Tweedie. Dr. Dan McKenzie: The Pathogenesis of Cholesteatoma. The paper will be discussed by Mr. C. Heath, Mr. Lowndes Yates, and others. Cases and Specimens will be shown by Dr. Dan McKenzie, Mr. Graham Brown, Mr. E. Broughton Barnes, and others. 5 P.M., LARYNGOLOGY. (Cases at 4 P.M.) A discussion will be held on Precancerous Conditions of the Larynx, in which it is hoped Dr. Chevalier Jackson (U.S.A.) will take part. Cases and Specimens will be shown relating to the subject under discussion. 8.30 P.M., ANÆSTHETICS. Presidential Address: Dr. H. W. Featherstone: A Visit to Some of the Hospitals in Canada and the Mayo Clinic. A discussion will follow.

ROYAL INSTITUTION, 21, Albemarle-street, W.

TUESDAY, Nov. 4th.—5.15 P.M., Mr. C. D. Ellis, F.R.S.: Aspects of Radio-activity.

THURSDAY.—5.15 P.M., Prof. J. B. Haldane: Physiology of Water.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.

TUESDAY, Nov. 4th.—5 P.M., Dr. W. E. Hume: Paroxysmal Tachycardia. (Bradshaw Lecture.)

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.

MONDAY, Nov. 3rd.—5 P.M., Dr. D. H. Patey: Demonstration of Specimens Illustrating the Pathological Conditions of the Salivary Glands.

THURSDAY.—5 P.M., Prof. G. E. Gask: Vicary's Predecessors. (Thomas Vicary Lecture.)

FRIDAY.—5 P.M., Sir Arthur Keith: Demonstrations of Specimens of Surgical Interest Recently Added to the Museum.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Nov. 3rd, to SATURDAY, Nov. 8th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. Mon., 4 P.M., free lecture by Dr. B. T. Parsons-Smith on Recent Advances in the Diagnosis and Treatment of Coronary Thrombosis. Special M.R.C.P. Lectures at 8.30 P.M.: Tues., Dr. Maurice Cassidy: Auricular Fibrillation; Fri., Dr. O. L. V. de Wesselow: Uræmia.—ST. JOHN'S HOSPITAL, Leicester-square. Mon., 2 P.M., free demonstration in the Out-patient Dept. by Dr. W. Griffith.—METROPOLITAN HOSPITAL, Kingsland-road, E. Tues., 2 P.M., free demonstrations by Dr. J. W. Linnell (Ward Round) and Mr. R. J. McNeill Love (Out-patient Dept.).—LONDON LOCK HOSPITAL, Dean-street, W. Four weeks' special course in Venereal Disease, occupying afternoons and evenings. HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C. Second week of post-graduate course in Diseases of Children.—ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, Broad-street, W.C. Afternoon course in Ophthalmology. Further particulars from the Fellowship of Medicine.

KING'S COLLEGE, Strand, W.C.

THURSDAY, Nov. 6th.—5 P.M., Mr. J. A. Hewitt, Ph.D. Metabolism of the Carbohydrates and Fats. (Last of four free lectures.)

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

THURSDAY, Nov. 6th.—9 P.M., Dr. R. D. Lawrence: Simplicity in the Treatment of Diabetes.

UNIVERSITY COLLEGE, Gower-street, W.C.

MONDAY, Nov. 3rd.—5 P.M., Dr. H. P. Gilding: The Reticulo-endothelial System. (Last of four free lectures.)

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.

THURSDAY, Nov. 6th.—4 P.M., Dr. H. Gardiner-Hill: Uses and Abuses of Endocrine Therapy.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, Nov. 5th.—4.30 P.M., Mr. Frank Kidd: Some Elementary Principles in Urology.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Nov. 7th.—4 P.M., Mr. F. W. Watkyn-Thomas: Ménière's Disease.

ST. JOHN'S HOSPITAL, Morden Hill, Lewisham.

MONDAY, Nov. 3rd.—4.30 P.M., Dr. John Gibbons: Demonstrations of Cases of Disease of the Lungs in Infancy and Childhood.

ROYAL NORTHERN HOSPITAL, Holloway-road, W.

TUESDAY, Nov. 4th.—3.15 P.M., Mr. L. E. Barrington-Ward: Demonstration of Surgical Cases.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, Nov. 3rd.—12 noon, Dr. Greenfield: Inflammation of the Central Nervous System. 2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Purdon Martin: Neurosyphilis.

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Symonds: Cerebral Abscess.

WEDNESDAY.—2 P.M., Dr. Martin: Out-patient Clinic.

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Mr. Just: The Vestibular Apparatus.

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Carmichael: Meningitis.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Nov. 3rd.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose, and Throat Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M. Medical, Surgical, Throat, and Ear Clinics. Operations.

FRIDAY.—10.30 A.M.: Ear, Nose, and Throat Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Children's Diseases Clinics. Operations.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, Nov. 4th.—5 P.M., Dr. H. MacCormac: Diseases Due to Animal Parasites.
THURSDAY.—5 P.M., Dr. W. J. O'Donovan: Occupational Dermatitis.

THE HALLEY STEWART TRUST.
TUESDAY, Nov. 4th, and the following THURSDAY.—6 P.M. (in the Memorial Hall, Farringdon-street, E.C.), Sir George Newman: How England Learned to Control Disease, and Health Problems of the Modern Period, respectively. (First two of four free lectures on Health and Social Evolution.)

INSTITUTE OF HYGIENE, 28, Portland-place, W.
WEDNESDAY, Nov. 5th.—3.30 P.M., Lady Barrett: Maternal Mortality.

CHADWICK PUBLIC LECTURES.
THURSDAY, Nov. 6th.—5.15 P.M. (in the Hastings Hall, B.M.A. House, Tavistock-square, W.C.), Dr. Matthew Ray: Rheumatism, Treatment.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
WEDNESDAY, Nov. 5th.—4 P.M., Prof. S. L. Cummins: Prevention of Tuberculosis.
THURSDAY.—4 P.M., Mrs. Marie Stopes, D.Sc.: History and Theory of Contraceptive Technique.

ANCOATS HOSPITAL, Manchester.
THURSDAY, Nov. 6th.—11 A.M., Mr. H. Platt: Clinical Demonstration. 4.15 P.M., Dr. Catherine Chisholm: Digestive Difficulties in Infancy.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
TUESDAY, Nov. 4th.—4.15 P.M., Mr. P. R. Wrigley: Calculi.
FRIDAY.—4.15 P.M., Lloyd Roberts Lecture at the University. Right Rev. E. W. Barnes, Bishop of Birmingham: Heredity and Predestination.

Appointments

CLEMENTS, A. E., L.R.C.P. and L.R.C.S.I., has been appointed Medical Officer of Health, Irvenstown District, Fermanagh.
HOLMES, J. G., M.B., Ch.B.N.U.I., Surgeon to St. John's Hospital, Limerick.
LEVICK, H. D., M.B., B.S.Lond., Medical Referee under the Workmen's Compensation Act for Middlesbrough, &c.
Certifying Surgeons under the Factory and Workshop Acts: TREMLOW, W. A. F., L.R.C.P. Lond., M.R.C.S. (Flint); WIGHT, A. (Stoveley, Westmorland).

Vacancies

For further information refer to the advertisement columns.

Albert Dock Hospital, Connaught-road, E.—Asst. Surg.
Banbury, Oxon, Horton General Hospital.—Res. M.O. At rate of £150.
Bangor, Caernarvonshire and Anglesey Infirmary.—H.S. £200.
Bath, Royal United Hospital.—Two Hon. Surg.'s.
Birmingham, Dudley-road and Selly Oak Hospitals.—Asst. Pathologist. £500.
Birmingham, Ear and Throat Hospital, Edmund-street.—4th H.S. to Out-patient Dept. £150.
Birmingham, Selly Oak Hospital.—Surgeon. £700.
Bradford, Royal Eye and Ear Hospital.—Jun. H.S. £150.
Brighton, Lady Chichester Hospital.—Jun. and Sen. H.P.'s. At rate of £50 and £100 respectively.
Brighton, Royal Sussex County Hospital.—Asst. Pathologist to Special Depts. £400.
Burnley, Victoria Hospital.—H.P. At rate of £150.
Cambridge, Addenbrooke's Hospital.—Res. Anæsthetist and Emergency Officer. At rate of £130.
Charing Cross Hospital, W.C.—Res. M.O. £350.
Children's Hospital, Hampstead.—Res. M.O. At rate of £100.
Connaught Hospital, Orford-road, E.—Res. H.S. At rate of £100. Also Hon. Visiting Dental Surgeon.
Coventry and Warwickshire Hospital.—Res. Asst. H.S. £125.
Durham County Mental Hospital.—2nd H.S. £150.
East Ham Memorial Hospital, E.—Hon. Surg., Hon. Phys. Also Hon. Radiologist.
East London Hospital for Children and Dispensary for Women, Shadwell, E.—Asst. Physician.
Elizabeth Garrett Anderson Hospital, Euston-road.—H.P., Obstet. Asst., three H.S.'s. Each at rate of £50. Also Clin. Assts.
Exeter, Royal Devon and Exeter Hospital.—H.P. At rate of £150.
Great Yarmouth General Hospital.—Jun. H.S. At rate of £140.
Guildford, Royal Surrey County Hospital.—Asst. Pathologist. £500.
Hampstead General and North West London Hospital, Haverstock-hill, N.W.—Cas. M.O. At rate of £100.
Hastings, Royal East Sussex Hospital.—Sen. and Jun. H.S. At rate of £150 and £100 respectively.
Heston and Isleworth Urban District Council.—Obstet. Phys. 3 guineas per session.
Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—Asst. in Dept. of Pathology. £350.
Hospital for Sick Children, Great Ormond-street, W.C.—Dental Surgeon.
Huddersfield, County Borough of.—Asst. M.O.H. £500.
Hull, Beverley-road Institution.—Asst. M.O. £300.
Hull Royal Infirmary.—Asst. H.P. At rate of £130.
Indian Red Cross Society, King George Thanksgiving (Anti-Tuberculosis) Fund.—Organising Secretary. Rs.750–1250 per month.
Ipswich, East Suffolk and Ipswich Hospital.—H.S. £120.
Leeds Hospital for Women.—Hon. Asst. Surg.
Liverpool and District Hospital for Diseases of the Heart.—H.P. £100.
London Jewish Hospital, Stepney Green, E.—Res. M.O., and Cas. O. Each at rate of £150. Also Jun. Res. M.O. At rate of £100.
Lowestoft, St. Luke's Hospital.—Jun. Asst. M.O. £500.
Manchester, Ancoats Hospital.—Orthopædic H.S. At rate of £100.
Manchester and Salford Hospital for Skin Diseases.—H.S. At rate of £100.
Manchester Royal Infirmary.—Dickinson Research Travelling Scholarship in Medicine. £300.
Margate Borough.—M.O.H., &c. £900.
Metropolitan Hospital, Kingsland-road, E.—Surg. to Ear, Nose, and Throat Dept.
Middlesbrough Education Committee.—Sen. Asst. School M.O. £500.
Newcastle-upon-Tyne Hospital for Sick Children.—Jun. H.S. Res. Sen. H.S. At rate of £100 and £95 respectively. Also Res. H.P. At rate of £95.
Northampton County Mental Hospital, Berrywood.—Jun. Asst. M.O. £350.
Northamptonshire County Council Education Committee.—Asst. School M.O. £500.
Northwood, Middlesex, Mount Vernon Hospital.—Res. M.O. £300.
Nuneaton General Hospital.—H.S. At rate of £120.
Oswestry, Shropshire Orthopædic Hospital and Agnes Hunt Surgical Home.—Two H.S.'s. Each at rate of £200.
Preston County Borough.—Asst. School M.O. £600.
Princess Louise Kensington Hospital for Children, St. Quintin-avenue, N. Kensington.—H.P. At rate of £100.
Queen's Hospital for Children, Hackney-road, E.—H.S. Cas. O. Also H.P. All at rate of £100.
Royal Northern Hospital, Holloway, N.—H.S. At rate of £70.
St. Andrew's Hospital, Dollis Hill, N.W.—Jun. Res. M.O.
St. Bartholomew's Hospital.—Two Chief Assts. to Dental Dept.
Sheffield Royal Hospital.—Ophth. H.S. At rate of £80.
South London Hospital for Women, Clapham Common, S.W.—Clin. Assts. to Special Depts.
Stockport Corporation's Maternity Hospitals.—Consultant Obstetrician.
Stockport Infirmary.—H.P. £175.
Truro, Cornwall Education Authority.—School Dental Surgeons. Each £500.
Tunbridge Wells and Counties General Hospital.—H.S. £160.
Warrington Infirmary and Dispensary.—Anæsthetist. £150 for a rota of 2 or 3.
West Riding of Yorkshire C.C.—Asst. Bacteriologist. £500.
Wigan Royal Infirmary.—H.S. At rate of £150.
Willesden General Hospital, N.W.—H.P. £100.
Willesden Urban District Council.—Asst. M.O. £600.
Wolverhampton Royal Hospital.—H.S. At rate of £150.
Woolwich and District War Memorial Hospital, Shooters-hill, S.E.—H.S. £100.

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Llandyssil (Cardiganshire).

Births, Marriages, and Deaths

BIRTHS.

BULL.—On Oct. 23rd, at Kingsthorpe, Northampton, the wife of Dr. A. G. Bull, of a son.
CARSON.—On Oct. 17th, the wife of Hugh Carson, M.B., B.Ch., The Hospital, Selly Oak, Birmingham, of a son.
GOFFE.—On Oct. 25th, at The Red House, Kingston Hill, Surrey, the wife of E. G. Leopold Goffe, M.D., B.S. Lond., of of son.
MILNE.—On Oct. 8th, at the McRobert Hospital, Cawnpore, U.P., India, to Dr. and Mrs. C. G. S. Milne—a son.
TOWNSEND.—On Oct. 21st, at Thorley Lodge, Yarmouth, I.W., the wife of Major E. M. Townsend, *M.C.*, R.A.M.C., of a daughter.
WILSON.—On Oct. 23rd, the wife of W. Etherington Wilson, F.R.C.S., of Hillsborough, Torquay, of a daughter.

MARRIAGES.

AYKROYD—BUTTERY.—On Oct. 18th, at the Church of the Annunciation, W., Wallace Ruddell Aykroyd, M.D., to Freda Kathleen, youngest daughter of Mr. H. Buttery, Potchefstroom, Transvaal.
WOOD—ENGLAND.—On Oct. 25th, at St. Augustine's, Edgbaston, Gordon Nesbitt Wood, M.R.C.S., to Cordelia Helen England, M.R.C.S., eldest daughter of Mr. E. T. England, King Edward's School, Birmingham, and Mrs. England.

DEATHS.

DAVIES.—On Oct. 16th, suddenly, at a nursing-home in Bournemouth, Gwilym Tremain Davies, L.D.S.R.C.S., late of New Cavendish-street, London, aged 41.
DOUGHTY.—On Oct. 19th, suddenly, at Woodside, Bearsted, Kent, William Doughty, L.R.C.S., L.R.C.P., aged 80.
HAFFKINE.—On Oct. 26th, at Lausanne, Prof. Waldemar Mordecai Wolff Haffkine, C.I.E., Bacteriologist with the Government of India (retired), aged 70.
REID.—On Oct. 20th, at West Kent Hospital, Maidstone, Edward Douglas Whitehead Reid, M.B., B.Ch., aged 47.
ROBERTS.—On Oct. 22nd, Sidney Morton Pearson Roberts, J.P., M.R.C.S., of The Gables, Linslade, Leighton Buzzard, Bucks., aged 70.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

A CONFERENCE ON MATERNAL MORTALITY.

THE fifth Conference of the Committee on Maternal Mortality was held at Friends House on Oct. 27th, under the presidency of the Duchess of Atholl. Referring to the recommendations of the Departmental Committee in its interim report, she said that a great part of the provision regarded as necessary already existed in many areas; even in rural districts 82 per cent. of the population were now within reach of a trained midwife, district nursing associations being largely responsible for this service. There was ground for confidence that the direction had been shown by which, with the coöperation of the conscience and intelligence of the public, we might find a way in which one of the greatest experiences of life might come to be regarded as something natural, normal, and not fraught with serious danger.

THE MINISTER OF HEALTH.

Mr. Arthur Greenwood spoke of the unreduced maternal mortality-rate as one of the black marks against the health services of our country, for nobody could be satisfied with deaths and disease resulting from preventable causes, as about half the 2000 deaths investigated by the Departmental Committee had been pronounced to be. The first line of attack he believed was to induce local authorities to use to the full the powers already possessed by them. If all local authorities used their powers up to 100 per cent., a marked impression might be made on the maternal death-rate. There were, however, areas in which antenatal care was provided, and only a minority of pregnant women took advantage of it; the best facilities for skilled attention were valueless unless the women could be educated to make use of them. Many committees had produced as many reports calling for the establishment of a national maternity service, but Mr. Greenwood had not yet met anybody who knew exactly what it meant. He had not got a scheme to put before the meeting, but he had an objective—that of a national maternity service fulfilling the principles laid down in the report. Details could only be formulated when they came to the stage of negotiations, and it would render no useful service to be too specific before counsel had been taken as to how the suggestions could be most effectively carried out. He would like to forge a bond of partnership between the National Health Insurance scheme and the local authorities, which he believed was the only satisfactory basis on which a national service could be established.

A NON-PARTY RESOLUTION.

Lady Erleigh moved a resolution emphasising the agreement of the Conference with the recommendations of the Departmental Committee's report, especially in its demand for an increase in the length and content of training of medical students in obstetrics, and in its five points as to the essential services necessary. On the proposal of Mrs. Cranley, seconded by Mrs. Malone, it was agreed to add home helps to the list of ancillary services desirable.

Miss Marion Phillips, D.Sc., seconded the resolution, and spoke of the grave responsibility of continuing to pile up a toll of preventable deaths while we failed to provide the care which might prevent them. She knew a scheme could not be produced in a night, but she suggested that the Minister of Health should set himself a mental time limit for carrying out negotiations with all those concerned. There was real need for haste, though a great deal might be done without waiting for the national scheme to be completed.

Dr. H. B. Brackenbury, chairman of the Council of the British Medical Association, said that the resolution had the support of the medical profession. It was that profession which had first formulated a definite maternity scheme, and all the schemes proposed had been largely in agreement as to the requirements. It was important to continue education and agitation, so that whatever Government was in power the necessity to do something in this matter might be kept prominently in mind. Although it might be wise to urge the putting into force of existing powers, and although the moment might not be favourable for a large expenditure on a new social service, yet the complete national maternity scheme must be kept in view, and no temporary measure must be allowed to interfere with or materially to delay the full scheme.

Discussion was carried on to the extreme time limit, after which the resolution was put to the meeting and carried unanimously.

A PLEA FOR SYMPATHY WITH THE DEAF.

Mr. Stanley Baldwin, at the annual meeting of the National Institute for Promoting the Welfare of the Deaf, last May, pointed out that the disabilities of the deaf are considerably aggravated by lack of sympathy on the part of those with whom they come into contact, a fault which often arises from want of thought and want of imagination. Much might be done to mitigate this unfortunate condition of things if the matter were ventilated in the public press, and it was gratifying to see that the *Sunday Graphic* of October 26th contained an article on the subject, written by "One who is Deaf." After enumerating some of those things which make life so difficult for the deaf, but which could easily be avoided if the public understood, the writer closes with the words "Do not laugh at our mistakes. Try to lighten our burden of deafness. We ask you only for the same sympathy and understanding which you instinctively give to the blind." This is a plea which surely will not be disregarded when once the public understand the position of these afflicted people.

"THE THREE CARD TRICK."

HOLBORN Borough Council has recently opened a centre to test the liability of children to diphtheria infection by Schick's method, and to immunise artificially those in whom the test is positive; in addition they have set out the dangers of the disease and the value of the remedy by means of a short propaganda film called "The Three Card Trick." The film opens with scenes on the racecourse and fair-ground where exponents of the art of card-sharping encourage their audience to "spot the lady." From this mysterious beginning the scene shifts to the site of the Foundling Hospital, where a crowd of children are seen at play; the high incidence of diphtheria, the dangers of infection by carriers, and the method by which children are rendered immune are described in simple headlines. The new centre at 10, John-street, Theobald's-road, is shown in action, and the mildness of the test is illustrated by the tranquillity of several small children under the operation. The popularity of the centre is already increasing rapidly.

In a slightly morbid epilogue the allegory of the title is explained; instead of a memorial card as the sole memento of a daughter dead of diphtheria, the wedding card of a living young woman might have appeared in later years, had the mother taken her to the immunisation centre as a small child. In this case the "winning card" is signed by the mayor for each child certified immune to diphtheria. The film is available for hire by other boroughs where it may be required for propaganda purposes.

NEW HOSPITAL FOR THE POTTERIES.—Lord and Lady Harrowby last week opened the new Burslem, Haywood, and Tunstall war memorial hospital at Stanfield, Burslem, the successor of the old Haywood Hospital. The hospital, which contains 68 beds, has cost £43,000, of which £6000 remains to be raised.

ADDRESSES AND ORIGINAL ARTICLES

THE DIAGNOSIS AND TREATMENT OF SOME COMMON MINOR DIGESTIVE DISORDERS.*

By T. C. Hunt, B.M. Oxf., M.R.C.P. Lond.,
PHYSICIAN IN CHARGE OF OUT-PATIENTS, ST. MARY'S HOSPITAL.

Certain common digestive disturbances tend to be rather neglected in text-books, perhaps on account of their comparative triviality, but frequently offer difficulties in practice both in diagnosis and treatment.

Bilious Attacks.

First of all I propose to consider those attacks which are generally described as a "chill on the liver" or more simply as "bilious attacks." The typical *bilious attack* or sick headache is usually just an attack of migraine—though as late as 1860 "bilious headache" was described as a troublesome complication of dyspepsia. Now the absolutely characteristic migraine attack is not such a very common occurrence—that is to say, an attack of one-sided headache occurring periodically, preceded by some form of aura and followed by vomiting and rapid recovery. It may often differ considerably from this typical picture, and this is one reason why migraine is not more frequently diagnosed. The headache may in the first place be quite commonly bilateral, in spite of the meaning of the word itself (which is, of course, derived from the Greek—hemikrania). Definite ocular symptoms may be slight, and, in fact, the typical "fortification figures" are only rarely seen. More important still there is, I am sure, a type of migraine—sometimes spoken of as abdominal migraine—in which headache is entirely absent, and this is a condition of very real practical importance. Its features are as follows:—

Attacks occur at intervals, sometimes quite regularly, with no relation to dietetic errors and without apparent cause; occasionally they seem to follow chill or some mental excitement or emotion. They most commonly begin in early adult life, although an onset later is by no means rare. There is frequently a day or two's preliminary depression, irritability, or lethargy, which is followed by abdominal discomfort or actual pain, and succeeded by vomiting of bile or bile-stained material. Giddiness is a frequent accompanying symptom. There is no pyrexia, but often a very marked mental state of misery and depression, which is very different from the frightened shocked attitude seen in serious surgical conditions of the abdomen. The discomfort or pain is usually situated more in the right hypochondrium and epigastrium, but is not associated with any resistance or rigidity in this area; there may, however, be definite tenderness along the liver edge.

This type of attack is generally recognised as a "chill on the liver"—and this is indeed far from a bad description. It is certain that many such cases in fact occur with hepatic disorder and with gallstones or cholecystitis.

Somewhat similar attacks may, however, be produced by other causes. There should be little difficulty in distinguishing such conditions as acute appendicitis, but besides migraine and cholecystitis—which I shall refer to again shortly—there are two common conditions which should be considered. The first is so-called gastric or abdominal influenza, the second is acute food poisoning.

Gastric influenza is one of those indefinite conditions whose very existence is denied by many. I am sure that such a condition does, in fact, exist, and in its diagnosis I would stress the following points: Firstly, it is primarily a general disease and only secondly an abdominal one—that is to say, the first symptoms are general: headache, malaise, muscular pains, after which digestive symptoms begin. Secondly, it is rarely or never purely abdominal, and is almost always associated with throat or respiratory symptoms of some degree. These may be in the form of a tonsillitis or just a common cold, occasionally associated with a facial or labial herpes (Picton).[1] There is moderate pyrexia, general aching and discomfort in the epigastrium, slight vomiting, marked anorexia, and great depression. Very rarely there is severe pain, due to spasm of the colon, which may closely simulate acute appendicitis; in "abdominal influenza," however, there is no true rigidity, and little real deep tenderness. A blood count is of the greatest value, as a leucopenia is typical of influenza, whilst appendicitis is associated with a leucocytosis. It is possible that the cause of the pain lies in the muscular coats of the intestine, analogous to the aching pains that occur in the voluntary muscles of the back and limbs. In treatment, the combination of rhubarb and soda is the most efficacious of all dyspeptic mixtures, and aspirin, as a rule, is also useful and quite well borne.

Acute food poisoning, on the other hand, most usually begins as a purely abdominal condition, on which general symptoms supervene. It is almost always associated with diarrhœa, and there is more vomiting: the patient is more collapsed and the pain more severe and colicky. The whole colon may be very tender, but any rigidity over it is generally fairly easily overcome by gentle coaxing. The clinical features, therefore, especially distinguishing abdominal influenza, are the onset as a general disease, the associated tonsillar or respiratory symptoms, and the marked anorexia and mental depression. We should always hesitate to diagnose it if the symptoms are exclusively abdominal.

In the differential diagnosis between abdominal migraine and *gall-stones* and *cholecystitis* there may be considerable difficulty. In all cases it is essential to consider whether the primary factor may not be a migrainous, constitutional, or hepatic one rather than a purely local one of the gall-bladder itself. I have been especially interested in this subject since seeing a number of patients who have suffered from such attacks and have, in fact, had their gall-bladders removed for actual gall-stones or cholecystitis. There are not a few such patients in whom the attacks continue almost unaltered after the operation; many of them seem to be lost sight of, and some are diagnosed as "post-operative neurasthenia." An interesting group was analysed lately by McClure and Huntsinger[2] who found that of 72 cases of "abdominal migraine" 45 per cent. gave evidence, by X ray or otherwise, of chronic gall-bladder disease; but of six such patients whose gall-bladders were removed for true organic disease not one was improved by the operation. In 90 per cent. of these 72 patients some evidence of disturbance of liver function was demonstrable, and I have myself, in a number of cases, found similar evidence. Thus I have quite recently seen 12 patients after cholecystectomy (for definite organic gall-bladder disease) who have continued to suffer from some dyspepsia and from periodic bilious attacks resembling "abdominal

* A post-graduate lecture delivered at the hospital on Oct. 3rd.

migraine." Mr. A. J. Cokkinis kindly allowed me to look up an unselected number of cases followed up by him after cholecystectomy and almost exactly one-third of these patients still complained of dyspeptic symptoms. I feel confident, therefore, that the condition of liver function is a most important factor in determining the symptoms associated with gall-bladder disease. It is, perhaps, no less important to diagnose between attacks of "abdominal migraine" and gall-bladder disease than to decide, if possible, which of the two may be the primary condition. Attacks since childhood or early adult life are against gall-stones being at least the sole cause of the condition. In true cholecystitis there are certain distinguishing features, notably a more or less localised tenderness over the gall-bladder area at the eighth and ninth right costal cartilages; pain is often worse on deep inspiration, and on percussion posteriorly the diaphragm may be found to move less than normally. Sometimes there is definite pain on pressure over the right phrenic nerve between the heads of the sterno-mastoid, which pain may travel to the abdomen and the right shoulder. The cyclical nature of the attacks is not necessarily against organic gall-bladder disease; the patients are, however, less well after the attacks than are migraine subjects, and are liable to flatulence and mild dyspepsia in their free intervals. The flatulence is like that of the "neuropath" and is often made worse by lying down, so that a post-prandial rest may actually disagree with the patient with gall-bladder disease. An X ray is of great assistance, and the results of cholecystography after oral administration of tetrabromphenolphthalein have greatly improved in recent months. Biliary drainage may also be of value. In the diagnosis, however, a careful history is of vital importance. In spite of everything there will still be many cases in which the attacks appear to be hepatic in origin and in which evidence of gall-bladder disease is inconclusive, others in which the attacks cannot be attributed solely to the presence of gall-stones, and some in which they have persisted unchanged after removal of the gall-bladder. There is a large bulk of evidence pointing to an association of hepatitis with gall-bladder disease (Graham,[3] Flint [4]), and I would urge that consideration should be given to the initial cause of liver dysfunction. This may, I believe, be in some cases migrainous or constitutional, in some bacterial. Of the "migraine" constitution we know all too little; the old writers spoke of it as "gouty" and the term uric acid headache was used, though Watson regarded such cases "with jealousy and apprehension." There are no constant stigmata that will enable us to detect such a constitution, which is, of course, typically familiar. Bacterial causes are certainly no less important. Subacute hepatitis may arise from the absorption of toxins or bacteria, both from the gut and from other areas of infection; such hepatitis is not only in itself, I believe, a fairly common cause of dyspepsia, but may allow the passage of organisms into the gall-bladder, causing chronic cholecystitis and the formation of gall-stones. Such a hepatitis may be quite unaffected by the removal of a diseased gall-bladder if the source of the infection is not attacked. Sepsis in the bowel, such as mild colitis or appendicitis, must, therefore, particularly be considered.

TREATMENT.

In the treatment of the underlying hepatic dysfunction in the type of case described there are four lines which I have found to give good results. Firstly, there is often an "aura" of especial tiredness and drowsiness, lasting a day or two before the attacks begin, and I have found quite large amounts of acetone bodies in the urine together with urobilin as tested by Ehrlich's aldehyde reagent. For this reason glucose is well worth a trial, and should be given in full doses of 1 to 2 oz. three times a day during this period. Secondly, I have used with great success Decholin, a powerful cholagogue which has had a wide use abroad. This is prepared by Riedel, of Berlin; it is similar to our Felamine and is a pure preparation of dehydrocholic acid—in other words, the active radical of the normal bile-salts. It may be given intravenously, but I have used it only in the form of tablets by mouth (two tablets three times a day). It is undoubtedly a powerful stimulant to biliary excretion, and probably also to the liver cells themselves—in other words, it is a choleretic as well as a cholagogue. Furthermore, such bile-salt preparations directly aid in the absorption of fats and also in the stimulation of the pancreatic secretion by virtue of their adsorbing action upon secretin (Mellanby). Patients should be warned that decholin may cause some abdominal discomfort at first, and this I think is sometimes due to pre-existing stasis of bile in the smaller ducts and the unaccustomed passage down them of larger amounts of bile. Thirdly, I have used drainage of the bile by duodenal catheterisation with success in a number of cases, though it sometimes requires carrying out on more than one occasion. Finally, the diet is, of course, of importance, and in this respect I am quite sure that quantity is of far more importance than quality; in some patients the fat tolerance is quite good, but few are able to take really large meals without some discomfort. Ices and cold drinks seem to be specially bad in cases of cholecystitis, and eggs are apt to cause so much distress that their administration has even been suggested as a diagnostic measure (Schmidt [5]). In migraine without gall-bladder disease it is rare to find any one article of diet that is especially prone to provoke attacks; the patients are, in fact, able to take a free diet without special consideration, and the best advice is just that of moderation.

Briefly to sum up, I have described a type of bilious attack which we may call abdominal migraine, that may occur as a true constitutional disorder or in association with gall-bladder disease. Differentiation may be difficult, and even if the gall-bladder is diseased its removal may not relieve the attacks. The underlying cause in both cases is often a metabolic liver disturbance, and may be treated successfully by the administration of glucose, bile-acids (e.g., in the form of decholin), moderation in diet, and sometimes by duodenal drainage of the bile. I will give one typical example of the results of treatment in such cases:—

The patient was first seen in February, 1930, aged 30. He had suffered from bilious attacks for seven years. They had occurred at intervals of about three weeks, and were associated with an initial period of drowsiness lasting one or two days, abdominal pain, and profuse biliary vomiting. The attacks lasted for two or three days and entirely incapacitated the patient; they were not associated with headache or jaundice, but constipation was present before and during the attacks; there were no ocular symptoms. His appendix had been removed in 1923; pyelography in 1924 showed nothing abnormal; in 1927 the gall-bladder was removed and calculi were found. He had been in many hands, but the attacks had been quite as frequent in spite of dietetic and other treatment; cholecystectomy had been entirely without influence. His father had suffered from similar attacks. The urine examined at the onset of an attack showed considerable amounts of acetone and urobilin. After this I ordered him glucose ℥ ½ twice a day and decholin tablets 1 t.d.s., with instructions to double the dose of both if he felt an attack developing. Since then he ha

had no further attacks at all—a period of seven months—although previously for six years he had not been free for longer than four weeks.

Functional Dyspepsia in Young People.

One or two types of dyspepsia which occur in young people are generally regarded as nervous or functional. Functional dyspepsia covers a large number of conditions, and there is one very good reason why this is so. It is this: nervousness may be a cause of indigestion, or indigestion may give rise to nervous symptoms. A healthy person—especially if he has neurotic tendencies—who begins to suffer from pain and discomfort after his meals, may quickly become irritable, nervous, and hypochondriacal (which is readily understandable). On the other hand, a primary nervous disorder may be the cause of digestive disturbances, and it is in this distinction that the key to diagnosis and treatment lies. A primary nervous dyspepsia is an undoubted clinical entity: hypnotism, for example, can produce it experimentally and the effects of worry and emotion upon digestion and appetite are too well known to require any emphasis. Such a dyspepsia, however, though at origin nervous may, by poor appetite and loss of tone, easily set up a true *secondary* organic catarrh of the stomach or bowel, in a way analogous to the nervous symptoms which so readily become grafted on to a primary organic disease. In the differentiation therefore of the primary cause the most thorough questioning as to the exact beginning of the digestive symptoms is a vital point. Is the dyspepsia preceded by "nervousness," or does the nervousness follow the dyspepsia? Is there an onset of general nervous symptoms following shock, anxiety, disappointment, or have the general symptoms come on later after an initial gastro-enteritis or other acute digestive disorder? The distinction is important in diagnosis, although in either case the digestive organs must *themselves* be treated whether their disorder is primary or secondary. The nervousness alone is not all that requires treatment. To illustrate this point and to emphasise the origin of these two forms of dyspepsia, I want to describe a type of case that we commonly meet with in practice.

The patient is a young girl who complains of almost constant abdominal discomfort, severe flatulence, tiredness, fatigue, and most usually constipation. The symptoms are generally regarded as neurasthenic. In many instances they are in fact due to neurasthenia, but there are two other causes that I want especially to discuss. These are hyperthyroidism and pulmonary tuberculosis. Now these three conditions—neurasthenia, hyperthyroidism, and pulmonary tuberculosis—may very closely resemble each other not only in their general features, but also in their digestive symptoms. *Neurasthenic dyspepsia* has certain more or less typical characteristics. The indigestion has little or no relation to meals, is often relieved by highly "indigestible" foods, and is generally almost or completely absent on holidays: it is often better when the patient is working. It is apt to be bad as soon as the patient goes to bed, and dyspepsias that are made worse by the recumbent position are very frequently neurasthenic. The patient is tired and yet restless and a bad sleeper. There is often domestic and especially sexual worry, and marriage and new surroundings will sometimes abolish every symptom. The condition is sometimes associated with a spastic colon, in which case there are attacks of sharp abdominal pain and marked constipation, occasionally with the passage of mucus in the stools. The patient is sure that her constipation is the cause of all her troubles, and has abused strong purgatives without any improvement in her condition. The symptoms are much worse before any nervous excitement and after emotional disturbances. The condition is essentially polysymptomatic and not digestive alone. On examination there is often a little tachycardia and the blood pressure is low. The basal metabolic rate is not raised.

In *mild hyperthyroidism*, dyspeptic symptoms are common, occurring in probably 30 to 40 per cent. of all cases. The patient is unduly nervous but there may be no eye signs or obvious fullness of the thyroid. There is a little tremor—much finer than that of neurasthenia, and the systolic blood pressure is a little raised; at the same time there is a low diastolic pressure so that the pulse pressure is perhaps 60 or 70 instead of 40 or 50. The tachycardia is persistent and does not disappear with rest in calm surroundings as does that of neurasthenia. The basal metabolic rate is higher than normal and can be approximately judged by combining the resting pulse-rate and pulse pressure according to Read's formula. I have found this a really useful, simple guide, the formula which I use being merely $\frac{3}{4}$ (PR + $\frac{3}{4}$ PP) − 72. In some cases there are attacks of diarrhœa. The cause of this "thyrotoxic dyspepsia" is variously thought to be connected with gastric achylia (vide Moll and Scott, THE LANCET, 1927, i., 68), hyperperistalsis and rapid emptying of the stomach, hypervagotonia, and an excessive flow of bile into the intestine. Whatever be the cause there is one point of great importance—when gastro-intestinal symptoms are really severe in hyperthyroidism the outlook becomes extremely bad.

Prof. F. Langmead has kindly allowed me to review his cases on the Medical Unit, and including the patients I have personally studied, I found that among 64 cases of Graves's disease and "toxic goitre," of eight who complained of severe attacks of diarrhœa and vomiting, every one died within quite a short time of the onset of these attacks. In the prognosis therefore of Graves's disease I am sure that a history of attacks of severe diarrhœa and vomiting must make us very guarded as to the outcome. Mild dyspeptic symptoms were present in almost 50 per cent. of the cases, but they have no such serious significance.

Pulmonary tuberculosis, as of course everyone knows well, may have an onset with dyspeptic symptoms although cough and sputum may be entirely absent. The toxæmia of a latent phthisis should, I think, be always in our minds in youthful dyspepsias, especially of thin and nervous girls. It may be that besides the toxæmia, nervous reflexes from the sensory fibres of the vagus in the lungs lead to hypermotility and hypersecretion in the stomach and intestines. In these cases there is generally a slight evening pyrexia and I would do not more than remind you of the importance of taking the morning and evening temperature (if possible rectally) for at least four days in such patients.

There is, finally, one type of *nervous dyspepsia in young girls* which I think almost deserves a special name. It is that associated with marked thinness, amenorrhœa, constipation, and visceroptosis. The patient is generally suspected of being tuberculous. It is an atonic dyspepsia of thin people. A test-meal shows a delayed but normal gastric acidity, and an X ray of the alimentary tract shows only some visceroptosis but no great delay in gastric or colon emptying-time. The symptoms are almost all digestive so that the condition is more monosymptomatic than is a purely nervous dyspepsia. I think you will all know cases of this type, but I hope you will forgive me if I read you the little

account which one such patient whom I recently saw wrote out for me :—

"Cessation of periods for three months; stomach always filled with gas; fullness after meals; burning pain after meals; food repeats no matter how light. Spots (etc.) before eyes; dizziness after stooping; feelings of sickness at times; heart thumps loudly and quickly after meals; ache across stomach at times; food remains in stomach for hours; constipation; no appetite or energy; feeling that stomach does not open properly."

Such a condition as this is sometimes wrongly attributed to ovarian deficiency, and one is apt to think that marriage will probably put an end to all the complaints. The patient whose account I read to you was, in fact, married shortly after I saw her, but there was no relief whatever in her symptoms (which was, I admit, a disappointment to me).

INSULIN AND APPETITE.

I am sure that the fundamental cause of the digestive symptoms is the visceroptosis and thinness, and in treatment the essential thing is to produce, if possible, a definite gain in weight; if this can be achieved the increased fat in the abdomen supports the stomach and colon and there is a marked improvement in the condition. Ordinary gastric sedatives, bromide, and measures directed towards the constipation seem ineffective, and a holiday and change of surroundings also lead to little improvement. In such cases I have lately had the most striking and satisfactory results from the use of insulin. It is often a most difficult thing to improve appetite or increase weight by other means. The details of treatment are as follows :—

The patient is ordered 5 units of insulin twice a day half an hour before lunch and dinner, and a plentiful supply of barley sugar or, better, actual glucose itself; the latter is not very expensive and can be taken with lemonade in tablespoonful doses three times a day. The benefit is sometimes most striking; the appetite improves and the gain in weight is really very remarkable. The dosage can be increased up to 10 units and 5 units, and if necessary up to a maximum of 30 units spread over the day. The injections should be continued for three weeks, after which the improvement most usually continues, though a second course may be necessary later. It seems as though the pancreas is given a stimulus which causes a continued overactivity, and I think in some degree leads to an increased output at the same time of its external secretion containing the digestive ferments. There is, indeed, considerable evidence that insulin provokes both gastric, pancreatic, and biliary secretion (Okada[6] et al.); it increases gastric acidity (Gurwitsch[7] et al.) and seems to lessen spasm (Simnitzki[8]). Thus, although insulin treatment in such cases is primarily a fattening process, I feel sure that there is, in fact, more than this alone involved. Insulin is a *tonic*, perhaps the best true tonic that we have, in that it is the most powerful drug stimulant of appetite that we possess. Mild hypoglycæmia is associated with a craving for food and a voracious appetite—which it is, of course, essential to satisfy. On no account must food be delayed after the injection, and trembling, sweating, vertigo, or other hypoglycæmic symptoms *must* be prevented. I have seen two cases in which such attacks had unfortunately been provoked and led to purely neurotic attacks subsequently of similar type. Two cases recently treated on these lines are as follows :—

(1) The first was a girl, aged 21, who complained of obstinate constipation, great flatulence, and discomfort after meals, and amenorrhœa during the last 3½ years. When first seen she weighed 6 st. 5 lb. An X ray showed some visceroptosis, and a fractional test-meal a normal though delayed acid secretion; there was no evidence of pulmonary tuberculosis or other organic disease. She was given insulin 5 units twice a day, and in 12 days gained 6 lb.; the insulin was increased to 10 units in the morning and 5 at lunch time, and continued for a further five weeks, after which her weight had gone up to 7 st. 9 lb. Her improvement continued and one week later her periods recommenced; three months after beginning insulin her weight had risen to 8 st. 5 lb.—a gain of exactly 2 st. Her constipation was less and her dyspeptic symptoms had almost entirely disappeared. She was given no other drugs, and the bowels were treated with occasional simple enemata only.

(2) The second case was that of a girl typist, aged 26, who had complained of nausea and flatulence after food and general dyspeptic symptoms for six years. During this time she had attended many doctors and undergone numbers of treatments by dieting and drugs without improvement. The menses had been very scanty and irregular for three years, and amenorrhœa had been present for the last five months. There was definite visceroptosis and marked constipation. When seen her weight was 5 st. 11 lb. She was put on insulin 5 units b.d., and in four weeks gained exactly 1 st. The insulin was then omitted and she was sent away to the sea for one month during which time her weight rose to 7 st. 3 lb.; her appetite has returned, she has lost her dyspeptic symptoms, and her periods, which began again three weeks after starting insulin, have been regular ever since.

OTHER SYMPTOMATIC TREATMENT.

I am sure that the use of insulin in this type of dyspepsia is a real advance in treatment; it is also useful in those dyspepsias of hyperthyroidism, pulmonary tuberculosis, and sometimes neurasthesia, which I have already discussed. In addition to this fattening and tonic treatment by insulin, other symptomatic treatment in this group of dyspepsias may be required towards the flatulence and constipation. I am sure that in both suggestion and reassurance is of importance. Flatulence is rarely or never due to actual fermentation in the stomach (apart from organic pyloric obstruction), though it occasionally occurs with the diarrhœa of "fermentation" in the colon. This should be told the patient, who must realise that her wind must come from swallowed air and cannot be locally produced in the stomach itself. The constipation is, in many cases, hardly constipation at all, but a mere dyschezia or retention of fæcal material in the rectum. I am sure it is often the subject of far too great a concern on the part of the patient. We know all too little of the actual toxic effect of chronic constipation. At least, it is certain that there is often less danger in constipation than in the diarrhœa produced by violent purgatives. Most of the putrefactive bodies of the indol group which are formed in the intestine seem to be astonishingly non-productive of symptoms when injected into man, and the healthy bowel mucous membrane appears to be relatively impermeable to such substances; on the other hand, irritants such as drastic purgatives would seem to damage this lining sufficiently to allow poisonous substances access to the blood stream. I am sure that in a number of patients constipation is a relatively harmless condition compared to the bad nervous effects which too much attention to it provokes; there is also that large group of cases of "spastic constipation" which are probably the direct result of a primary neurosis. This being so in the type of case that I have described the constipation should be treated by a full reassurance to the patient that no harm will result if the bowels are not open as often as she would consider necessary; nor would her life be in peril if they were in fact, only open every third day.

It is thus wisest to allow a simple enema every third day, and usually with the insulin course, a mild sedative, and a bigger appetite and diet, the bowel soon resumes a more regular evacuation. All drastic purgatives should, therefore, be banned, and the work of Mellanby has suggested that even liquid

paraffin may have detrimental effects upon digestive processes. I have found that a dose of 1 oz. of lactose, in tea, first thing on waking up in the morning, acts as a most useful laxative and also aids in improving weight.

A *diet* that calls for a minimum of demands upon the gut is advised, but I am sure that too many restrictions fix the patient's attention too much upon her digestive organs. It is a limited and narrow outlook on life when every thought is directed to the choice of food and to a satisfactory evacuation of the bowels every morning.

In the true neurasthenic dyspepsia, I am sure that *change* is the most important thing of all in treatment. The dyspepsia must be treated, but treat it in new surroundings—the neurosis must be treated, but treat it with new thoughts! Imagination is not the cause of all the symptoms—they are largely just a "habit of illness" as little under voluntary control as are the healthy habits of appetite or sleep. The habit must be taken in hand rather in the way that a drug, drink, or tobacco habit must be taken in hand. A serious dyspeptic habit is unlikely to be broken at home; the first step of treatment, therefore, must often be institutional. Finally, may I read you the advice of Thomas Watson,[9] who wrote in 1860 of this condition:—

"... of the concomitants of dyspepsia one is hypochondriasis ... in truth a species of insanity ... in which the patient becomes a plague to himself as well as to his physicians ... The management of his mind is particularly nice and difficult; it will not do to treat him as if his ailments were imaginary: he disbelieves you, contemns your judgment and deserts you, to be fleeced perhaps by some villainous quack; you must hear what he has to say; show an interest in his case, and prescribe for him; assuring him that you understand his malady, that it is curable, and that he will be cured provided he follows your directions; if you can succeed in gaining his confidence ... the battle is half won. To tell such a person not to think of his grievances would be worse than useless. The very effort to drive a subject from our thoughts fixes it there the more surely. But you must endeavour to turn his attention to other things, and to awaken in him some new interest. Prescribe change; change of air, change of place and scenery, change of society. Get him to travel in search of health."

Dyspepsia in Old People.

The third class of digestive disorders that I want to consider in contrast to the last types are two forms of dyspepsia occuring in old people.

Enlarged Prostate.—In the first type the patient is a man of, perhaps, 60 or 65 who complains of gradually increasing attacks of discomfort in the epigastrium, of moderate intensity, rather worse after meals, but unaccompanied as a rule by vomiting or irregularity of the bowels. The age makes us at once suspect a carcinoma, and there is often a sallow cachectic dried appearance of the skin that appears at first sight to bear out the suggestion. On the other hand, there is no abrupt beginning of the indigestion in the middle of perfect health, as is often the way with carcinoma of the stomach, nor is there gross anorexia, especially for meat, such as occurs so characteristically in this condition. The tongue is furred and dry. The cause to which I am referring is an enlarged prostate. I am sure that there is much in the old aphorism that "old men with gastric ulcers have got enlarged prostates," and prostatic or genito-urinary dyspepsia is a common condition that may easily escape recognition. Patients will frequently ignore or take for granted some increased frequency of micturition or hesitancy in the stream, and will only admit such symptoms on direct questioning. There is no doubt, however, that quite moderate prostatic enlargement may be a cause of symptoms referred to the digestive organs, and the alimentary symptoms may quite overshadow the prostatic. The condition never occurs below the age of 50. In some cases the dyspepsia is directly due to definite urinary obstruction with renal damage and mild uræmia. In a number, however, it does not necessarily imply nitrogen retention in the blood and the exact explanation is difficult. The diagnosis is relatively simple if the possibility of prostatic dyspepsia is borne in mind. The absence of colon symptoms with diarrhœa and blood and mucus in the stools, the fairly good appetite, which is often capricious, and the discovery of an enlarged prostate per rectum, are the important points. The finding of a small amount of residual urine—say 1 or 2 oz.—on catheterisation is characteristic. The stools should be examined for occult blood, which can be very simply done with the use of benzidine tablets—a test that should never be omitted when carcinoma of the stomach is suspected. The blood-urea will be raised in a few cases, and should be examined if there are other symptoms suggesting true uræmia, such as headache and drowsiness and a urine of low and fixed specific gravity. An X ray of the alimentary tract or barium enema may be necessary finally to remove all doubts. The treatment is essentially surgical, though this decision requires great judgment; the improvement in digestion after operation is often remarkable.

ARTERIO-SCLEROTIC DYSPEPSIA.

The second type of dyspepsia of old age is one to which I can find little reference in the text-books and is, I fear, a rather ill-defined, though, I think, common condition. It is not unlike prostatic dyspepsia and its diagnosis must be largely reached by a process of exclusion. This type I would call arterio-sclerotic dyspepsia. The patient is typically a man of rather nervous temperament who complains of indigestion and rheumatism. The latter amounts to aching or sharp pain in the arms and legs, sometimes of the true intermittent claudication type coming on in cramp-like fashion after moderate or severe exertion, but unaffected by changes in the weather. There is also pain in the epigastrium after meals, which occasionally amounts almost to colic, but is more usually a dull, gnawing pain which is not severe enough to cause vomiting. There is obvious thickening of the peripheral vessels, and the retinæ show the typical changes of arterio-sclerosis; sometimes there is associated headache and nocturnal polyuria, with the urinary changes of interstitial nephritis; the blood pressure is usually raised, though often not above 180–200 mm. The digestive disorder may thus be very similar in ætiology to the genito-urinary dyspepsia as seen in association with an enlarged prostate, and I would not wish to draw too sharp distinctions between the two groups. On the other hand, arterio-sclerotic dyspepsia is, I think, due to an actual vascular change in the gastric and mesenteric vessels and abdominal aorta. There have been a large number of interesting experiments showing the different response of normal and arterio-sclerotic vessels to varying stimuli, in some cases as studied upon the stomach vessels themselves (Lange[10]). Thus heat and cold cause very different responses in normal and diseased vessels, and it is reasonable to suppose that the entrance of food into a stomach poorly supplied with blood by diseased vessels may lead to abnormal function, both motor and secretory. The treatment must be largely dietetic and iodides and vasodilators do not appear to exercise very much influence.

I am sure that the old rules laid down by Abernethy are especially applicable in this type of patient, and

deserve even more to ensure his lasting remembrance than does his famous blue pill. The advice he gave is: (1) allow six hours between meals; (2) eat slowly—chew very well and rest after meals; (3) take small amounts at a time; (4) dine off one dish—a rule that was designed to avoid mixing and has definite experimental evidence to support it. Thus, starchy food and meat together should only be taken with care, and I am quite sure that in the dyspepsia I am discussing meals of many ingredients are an important factor in provoking symptoms. I believe there is much still to be learnt in the reaction of foods upon each other during digestion.

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A STUDY OF
PLASMA-PROTEIN LOSS WITH ŒDEMA
BUT WITHOUT PROTEINURIA,
AND ITS BEARING ON THE CONCEPT OF NEPHROSIS.

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THE relationship emphasised by Epstein, Govaerts, Shapiro, Van Slyke, and others between œdema and the lowering of the protein content of the blood plasma in cases exhibiting chronic albuminuria, has been the subject of increasing comment during the last decade. Summarised briefly, the current view is that when the plasma proteins become depleted by protein loss via the kidney, œdema appears, it being assumed that the passage of fluid from the blood into the tissues is either a compensatory mechanism endeavouring to restore the concentration of plasma-proteins to normal, or that the diminution of these proteins in the blood stream so lowers the colloid osmotic pressure that the normal reabsorption of water from the tissues into the venous capillaries is prevented.

Recent work by Govaerts has shown that the albumin is the most important factor in regulating the osmotic relations of the blood and tissues, and that when the depletion is mainly at the expense of this fraction œdema appears early. As to the actual degree of albumin depletion at which œdema appears there is still doubt, nor do our own observations enable us to define the critical limit with exactitude. A fair average figure for the total plasma proteins in cases showing œdema is 4 per cent., with an albumin content of 2 to 3 per cent.

It has appeared to us that interesting results might be obtained by studying cases in which considerable loss of plasma proteins has occurred by routes other than the kidney. Such a group of cases is difficult to find, but study of a series of patients showing massive ascites due to various conditions indicates that in this group suitable cases occur. The protein content of many ascitic fluids is relatively high, and when it is remembered that very large quantities of such fluids often accumulate in the abdomen it is apparent that a severe loss of protein from the blood may occur. It is also well known clinically that such patients frequently exhibit œdema of the arms and legs which up to the present has not been explained. Œdema of the legs has often been assumed to be due to pressure on the pelvic veins, but a similar explanation cannot hold with regard to the upper extremities. It occurred to us that the œdema of such patients might be due to depletion of the plasma proteins via the ascitic fluid, and it was felt that a careful comparison between the blood and urine, &c., in these cases and in patients showing œdema associated with the heavy albuminuria of "nephrosis" would prove instructive. Certain other cases showing œdema of unexplained origin have been examined. Blood analyses revealed a similar depletion in protein content, and, as will be seen later, an explanation for the protein loss is suggested.

CASE 1.—Female, aged 64. Three weeks before admission she caught a chill. She then noticed swelling of abdomen accompanied by breathlessness. A fortnight later the legs began to exhibit increasing œdema. Heart and kidneys normal. Ascites was present, causing much distention, and it was decided one week after admission to tap her abdomen to relieve her increasing dyspnoea. Fluid drained quite easily, but later patient collapsed and died.

Autopsy.—Only a partial post-mortem examination could be obtained and diagnosis was not established; both kidneys were, however, examined and found to be normal, both macroscopically and microscopically.

Biochemical observations—

Blood.	Non-protein nitrogen	26 mg.	per 100 c.cm.
	Urea	26 ,,	
	Albumin	3·36 g.	
	Globulin	1·43 ,,	
	Fibrinogen	0·5 ,,	
	Cholesterol	220 mg.	

Urine.—No albumin; no abnormality.

Ascitic fluid.	Non-protein nitrogen	35 mg.	per 100 c.cm.
	Urea	33 ,,	
	Albumin	4·43–4·9 g.	
	Globulin	1·1 –1·0 ,,	

CASE 2.—Male, aged 57. Four years before admission he noticed definite pallor and shortness of breath, accompanied by œdema in limbs and other parts of the body. At first diagnosed as cardiac failure, he was later treated as a severe anæmia by means of liver extract. The œdema persisted. His appetite began to fail some ten months later. He never complained of nausea nor vomiting, but flatulence troubled him. On admission massive œdema was present in legs, upper limbs, and abdominal wall. Heart normal; free fluid was present in abdominal cavity. A test-meal performed strongly suggested an advanced carcinoma of the stomach; occult blood in stools; death occurred six weeks after admission.

Autopsy.—Carcinoma of pyloric end of stomach. Secondary deposits in lymph glands. Anæmia, fatty myocardium, anasarca. Streptococcal infection of ascitic fluid (8 pints). Kidneys normal, both macroscopically and microscopically.

Biochemical observations—

Blood.	Non-protein nitrogen	22·5–15·4 mg.	per 100 c.cm.
	Urea	17 –15·7 ,,	
	Cholesterol	122 and 120 ,,	
	Total protein	4·01 g.	
	Albumin	2·15 ,,	
	Globulin	1·58 ,,	
	Fibrinogen	0·28 ,,	

Urine.—No albumin; no abnormality.
Ascitic fluid.—No estimation of protein was made.

CASE 3.—Male, aged 36. In June, 1929, when doing full duty in police force, began to lose weight, occasional vomiting, poor appetite. January, 1930, admitted Guy's Hospital, occasional trace of albumin in urine, no œdema. August 1930, œdema legs and scrotum, ascites, no albuminuria, occasional slight pyrexia, diagnosis? tuberculous peritonitis. August 14th, 1930, laparotomy, no peritonitis, ascites

ver hard and cirrhotic; splenectomy; spleen normal in ize and on section. September to October, 1930, recurrent scites tapped on several occasions. Patient still under bservation.

Biochemical observations—

Blood. { Albumin .. .. 3·44 g. / Globulin .. .. 1·67 ,, / Fibrinogen .. .. 0·42 ,, } per 100 c.cm.

Urine.—Except for an occasional trace of albumin no bnormality has been found.

Ascitic fluid. { Total protein 3·27 g. per cent. / Albumin .. 1·63 ,, ,, ,, }

CASE 4.—Female, aged 49. February, 1929, operation n a provincial hospital for perforated gastric ulcer. A arge, probably malignant ulcer was found, a piece of omenum was sewn over the ulcer, and a gastro-enterostomy erformed. She felt well after the operation for 12 months ut then began to complain of anorexia and weakness. week before admission she noted legs becoming œdematous. Edema has increased, now present in abdominal wall, pper and lower limbs, and sacrum. Ascites present. There is a mass in abdomen occupying the greater part of he left upper quadrant. Occult blood in stools; extreme econdary anæmia; red cells, 1·3 to 2·3 million; Hb 12 per cent.; white cells, 16,000–20,000.

Biochemical observations—

Blood. { Non-protein nitrogen . 30 mg. / Albumin .. .. 1·94 g. / Globulin .. .. 2·56 ,, / Sugar .. .. 114 mg. } per 100 c.cm.

Urine.—No albumin; no abnormality.

CASE 5.—Male, aged 44. Pain for eight months in left ypochondrium. Acid eructations; distension; for six nonths has noticed that his abdomen gradually swelled up—wo months ago noticed increasing œdema of both legs; omiting appeared a month ago. No history of hæmatemesis; no melæna.

On admission—Heart normal; abdominal walls œdematous and distended by fluid; legs, thighs, and scrotum listended by œdema; abundant fluid in peritoneal cavity. Melæna for six days during his stay in the wards. X ray examination revealed an opacity on left side of abdomen. Spleen palpable three inches below ribs.

Blood count: Reds, 5,050,000; Hb. 79 per cent.; white ells, 4100; differential count normal; eosinophilia on one occasion.

August, 1930, tapped twice weekly, 18, 16, 5, 24 pints on various occasions.

October, 1930, laparotomy; spleen large, exhibiting nfarcts; removed. Liver, marked cirrhosis; no evidence of carcinomatosis.

Death occurred a week later.

Autopsy: Small cirrhotic liver, no evidence of carcinomaosis. Kidneys normal, both macroscopically and microcopically.

Biochemical observations—

Blood. { Non-protein nitrogen .. 28–40 mg. / Urea .. .. .. 28–54 ,, / Cholesterol .. .. 139–144 ,, / Albumin .. .. 1·8 0·9 1·0 g. / Globulin .. .. 2·6 5·2 4·9 ,, / Fibrinogen .. .. 0·3 ,, / Fouchet .. .. Faintly positive. / Indirect van den Bergh 1·0 units bilirubin. } per 100 c.cm.

Urine.—No albumin; no abnormality.

Ascitic fluid. { Albumin .. .. 4·7 g. per 100 c.cm. / Globulin .. .. 3·0 ,, ,, ,, ,, }

(These concentrations of protein at the first tapping must be orrelated with the enormous total quantity of ascitic fluid.)

CASE 6.—Male, aged 49. Attended hospital on August 19th, 929, with two months' history of epigastric pain, and egurgitation of food one and a half hours after food, ightly relieved by taking food. Treated with alkalis. In ctober, 1929, developed marked œdema of legs without rther symptoms. No explanation of œdema could be iscovered; œdema persisted until January, 1930. Gastric mptoms recurred in May, 1930; X ray: large ulcer en on posterior wall of stomach near the lesser curvature. his has disappeared under prolonged treatment; no currence of œdema.

Biochemical observations—

Blood (during œdema period).

Oct. 14th, 1929.		Dec. 30th, 1929.	
.P.N. .. 38 mg.	per 100 c.cm.	N.P.N. .. 30 mg.	per 100 c.cm.
rea .. 34 ,,		Urea .. 29 ,,	
lbumin .. 2·75 g.		Albumin .. 2·29 g.	
lobulin .. 1·83 ,,		Globulin .. 2·21 ,,	
.brinogen .. 0·26 ,,		Fibrinogen .. 0·52 ,,	
		Cholesterol .. 190 mg.	

Oct. 17th, 1930 (no œdema).

.P.N. .. 41 mg.	per 100 c.cm.	Albumin .. 3·75 g.	per 100 c.cm.
rea .. 45 ,,		Globulin .. 1·75 ,,	
holesterol . 197 ,,		Fibrinogen .. 0·28 ,,	

Urine.—No abnormality at any time.

Commentary.

The cases referred to above definitely support the theory that depletion of plasma proteins from any cause will lead to the production of œdema. Three of the patients had ascites with high protein content, in the others there was extensive ulceration of the stomach presumably leading to long-continued loss. Loss from the plasma of albumin, rather than of globulin, is known to be characteristic of œdema of the so-called "renal" type, and in this, as in many other respects, the cases described above presented striking similarities to the group often described as "nephrosis." Albuminuria, however, was absent and the blood cholesterol was within normal limits, whereas in nephrosis it is raised.

A recent experimental attempt to imitate the pathological condition occurring in nephrosis has been made by Barker and Kirk. These workers removed successive quantities of blood from dogs, centrifuging the corpuscles down, decanting the specimen, adding an equal quantity of saline, and then reinjecting the corpuscle-saline suspension. In due course the animals developed œdema and hypercholesteræmia, and this "plasmapheresis" was considered by these workers to be comparable to the plasma loss via the kidneys occurring in nephrosis. It is worthy of note that œdema did not appear until the albumin fraction of the plasma had been reduced to below 1 per cent. In the experience of the present authors and others, œdema often appears at a much higher plasma-protein concentration in human beings. Barker and Kirk state that after œdema had developed albumin appeared in the urine, and the kidney when sectioned later showed the characteristic tubal changes of nephrosis. From this they conclude that the kidney was damaged by a lowered plasma-protein content, and accept this as support for the theory that nephrosis is a disease of extrarenal origin.

We feel that the conditions in the cases quoted by us above are closely similar to the plasmaphereses in the dogs of these authors. The depletion of proteins in our cases, sometimes by passage into the peritoneum, sometimes by apparent leakage from ulcerating surfaces, was equal to that occurring in dogs, the duration was in all cases longer, and massive œdema was present in all. It is, therefore, important to note that in not one of these patients was there evidence of renal damage. The urine was free from albumin, casts, red blood-cells, or any abnormal constituent. In three of the cases death occurred, and at the autopsy the kidneys were found to be normal. In the others tests of renal efficiency, such as the urea-concentration and water elimination test, failed to demonstrate any renal lesion. Admitting that such tests are usually negative in early nephrosis, the post-mortem findings in three of the present cases, and the constant absence of proteinuria, may be taken as fairly conclusive evidence that the kidneys were normal in all. We must, therefore, assume that in the human subject the diminution of plasma proteins, even for a considerable time, does not produce changes in the kidney.

The importance of this in relationship to the ætiology of nephrosis is, we feel, very great. The "diabetes albuminuricus" theory ascribes the cause of nephrosis to a modification in the protein molecule rendering it permeable to the kidney, with the result that massive loss occurs in the urine. Œdema then results and the renal changes which occur have been thought to be due to the loss of plasma proteins. Unless it be argued that the mere passage of the abnormal protein through the kidney is capable of

producing renal lesions, it would appear that this argument falls to the ground, since extrarenal plasmapheresis in man does not damage the kidney. This forms a strong argument in favour of the view that the kidney is at least one of the primary seats of damage in nephrosis, and that the renal lesion causes the alteration in the constitution of the plasma proteins, and not vice versa.

SUMMARY.

Massive loss of protein may occur from the blood by routes other than the kidney. Œdema follows this loss, and the mechanism of its production is the same as that operating in nephrosis—i.e., diminution of the plasma proteins. In such cases no pathological changes are produced in the kidneys. This is definitely opposed to the theory that the renal lesions of nephrosis are secondary to plasma-protein depletion, and not vice versa.

We are indebted to Dr. V. Dickinson for permission to publish details of one case.

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CANCER OF THE SKIN.

A STATISTICAL NOTE.

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THERE is a tendency at the present time for observers to regard cancer, at least in its squamous form, as occupational in origin when it occurs in the skin of a manual worker. There is evidence to demonstrate the occurrence of skin cancer in tar workers and epithelioma of the scrotum in mule-spinners, but few statistics exist on the incidence of skin cancer of other parts of the body in various trades.

The statistics given here are compiled from the patients attending the Manchester and Salford Hospital for Skin Diseases, and to the honorary physicians of the hospital for their kindness in allowing me to publish these figures I tender my sincere gratitude.

Yearly Incidence.—The number of patients attending the skin hospital suffering from cancer of the

TABLE I.

Year.	Patients.	Squamous-celled.	Basal-celled.	Year.	Patients.	Squamous-celled.	Basal-celled.
		%	%			%	%
1919	10,113	22 (0·22)	92 (0·91)	1925	9,489	32 (0·34)	126 (1·32)
1920	10,439	18 (0·17)	93 (0·89)	1926	9,502	47 (0·49)	117 (1·23)
1921	9,644	16 (0·17)	97 (1·00)	1927	9,903	39 (0·39)	115 (1·16)
1922	9,003	26 (0·29)	76 (0·84)	1928	10,267	50 (0·49)	137 (1·33)
1923	9,378	36 (0·38)	106 (1·10)	1929	10,466	67 (0·64)	134 (1·28)
1924	9,418	32 (0·34)	100 (1·06)				

skin increased from 114 in 1919 to 201 in 1929. The increase was most marked in cases of the squamous variety—namely, from 22 in 1919 to 67 in 1929—but a definite increase also occurred in the basal-celled type. The increase was not only in actual numbers but also in the percentage of the total number of patients attending the hospital who suffered from malignant disease.

It is difficult to determine how far these figures can be regarded as a true index of the incidence of the condition and how far the apparent increase is due to better and more careful diagnosis, as the result of which the patients are referred to hospital more frequently. The almost trebled number of patients suffering from the squamous-celled type, however, seems to suggest a true increase in its incidence (Table I.).

Until 1929 the cases were not recorded in detail, but since that date 57 cases of squamous and 175 of the basal type have been noted.

Squamous-celled Carcinoma.

In 14 out of 57 cases the tumour was superimposed on a previously existing lesion; in 11 cases this lesion was lupus vulgaris, while in the remaining 3 it was lupus erythematosus. All these patients had been treated by X ray radiations at some time previously, but in only two cases was there a history of an X ray burn. Our experience did not confirm the common statement that a wart is often present at the site of the tumour; in only one case was there reason to suspect that the injudicious application of caustics to a wart of some years' duration had initiated malignant change in it.

Sex- and Age-incidence.—Males were affected to a greater extent than females in the proportion of 3 to 2. The large number of patients below the age of 40 is accounted for by the number of carcinomata secondary to other lesions which occurred for the most part in early adult life. Apart from these, the largest number of cases in any five-year period occurred between the ages of 65 and 69 (Table II.).

TABLE II.

—	Total.	M.	F.	—	Total.	M.	F.
Below 40..	12	4	8	60–64..	5	5	0
40–44..	4	3	1	65–69..	10	7	3
45–49..	6	4	2	70–74..	4	3	1
50–54..	6	2	4	75–79..	2	1	1
55–59..	7	6	1	Over 80..	1	1	0

Occupational Incidence.—In histories of exposure to carcinogenic agents persons performing the same task give different answers. For instance, whereas one stripper and grinder in a mill stated that his clothes and whole body were saturated with oil; another man carrying out the same work said that his skin was never in contact with oil. How far this discrepancy may be due to better conditions obtaining in some mills or to different standards of personal cleanliness in the individual workers it is hard to determine. In examining these figures it must be remembered that they were obtained from hospital practice to the exclusion of the professional and business classes (Table III.).

TABLE III.—*Men.*

Tar workers	5	Railway guards	2	Flyer-maker	1
Carters	2	Mill-hands	6	Paper-maker	1
Labourers	6	Clerks	2	Engineers	3
Colliers	2	Bleacher	1		
Gardeners	3	Window-cleaners	2		

Five of these men had worked in a mill before their present employment, and 13 stated that their previous or present work necessitated the use of mineral oil or tar.

TABLE IIIA.—*Women.*

Housewives	15	Mill-hands	2	Box-maker	1
Hemstitcher	1	Clerk	1	Dyer	1

Six women had worked in a mill before their

marriage, and seven had used oil in the course of their various employments.

Situation of the Lesion.—Forty of the 57 cases had the lesion on the face, while of the four patients who had the tumour on the arm three were tar workers and the other a mule-spinner (Table IV.).

TABLE IV.

Face	40	Limbs	8
Ears	3	Finger	1
Lids	3	Arm	4
Cheek	26	Leg	1
Lips	4	Hand	2
Nose	4	Body	1
Neck	2	Scrotum	6

Basal-celled Carcinoma.

Sex- and Age-incidence.—In this type the women predominated, there being 102 women to 73 men. The greatest number of cases occurred between the ages of 60 and 64, showing a maximum age-incidence in the five-year period preceding the maximum for the squamous type. The incidence for male and female ran approximately parallel (Table V.).

TABLE V.

—	Total.	M.	F.	—	Total.	M.	F.
Below 30..	5	3	2	55–59..	26	11	15
30–34..	4	2	2	60–64..	34	16	18
35–39..	12	5	7	65–69..	17	6	11
40–44..	14	1	13	70–74..	12	8	4
45–49..	13	4	9	75–79..	5	0	5
50–54..	30	14	16	Over 80..	3	3	0

The *occupational incidence* was as follows :—

TABLE VI.—*Females.*

Housewives	90	School-teacher	1
Mill-hands	7	Shop assistants	2
Baker	1		
Tailoress	1		

In addition to the seven mill-hands in Table VI., 12 women had at some time worked in a mill. Twenty-eight stated that their work required the handling of oil, although in most cases direct contact of the oil with the skin was only very occasional.

TABLE VIA.—*Males.*

Shop assistant	1	Bleachers	3	Printers	2
Engineers	9	Stone-mason	1	Window-cleaner	1
Mill-hands	11	Gardeners	3	Painter	1
Packer	1	Clerks	6	Sailor	1
Labourers	14	Porters	2	Retired	6
Publicans	2	Moulder	1		
Colliers	6	Bricklayers	2		

Of the men, 18 had worked in a mill at some time previous to their present employment, and 25 had used oil in the course of their past or present work.

The *situation of the lesion* is shown in Table VII.

TABLE VII.—*Women.*

Face	97	Face (*cont.*)—	
Chin	4	Inner canthus	7
Forehead	10	Lower lid	6
Cheek	16	Lip	5
Temple	12	Neck	3
Nose	36	Abdominal wall	2
Ear	1		

TABLE VIIA.—*Men.*

Face	66	Face (*cont.*)—	
Cheek	14	Temple	9
Forehead	5	Pre-auricular	3
Inner canthus	6	Neck	2
Lip	2	Abdominal wall	3
Nose	23	Limbs	2
Lid	3	Elbow	1
Ear	1	Arm	1

From these figures it will be seen that by far the most common situation of both forms of cancer of the skin is the face. This fact, in our opinion, is against an occupational cause, since the face is the part of the body least likely to be brought into contact with irritating substances used in any occupation.

THE DICK TEST IN PREGNANCY AND ITS RELATION TO PUERPERAL SEPSIS.

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THE Dick test was performed on 600 pregnant women, of whom 22 per cent. reacted positively, the incidence and intensity of positive reactions being greater in primiparæ, irrespective of age, than in multiparæ. Among multiparæ the proportion of strongly positive reactors decreased with increasing age; so also did the incidence of puerperal sepsis, whereas both remained constant for all ages in primiparæ. A correlation between a positive Dick test and susceptibility to puerperal sepsis was thus suggested, but was not supported by further analysis.

Previous streptococcal infection—scarlet fever, tonsillitis, puerperal sepsis—did not appear to influence the reaction to the Dick test. On the other hand, the reaction became negative when Dick-positive patients who had puerperal sepsis, however slight, were retested immediately after the pyrexia subsided.

The puerperia of 500 women in the series were investigated. When all cases of puerperal pyrexia, whether notifiable or not, were divided into puerperal sepsis and pyrexia due to other causes, the analysis showed that women who reacted positively to the Dick test were not more liable to develop puerperal sepsis than were negative reactors. However, infection when it occurred tended to be more severe in the Dick-positive than in the Dick-negative cases. An investigation of the factors predisposing to puerperal sepsis showed that sepsis was much more frequently associated with a difficult or mismanaged labour and/or a poor condition of health than with a positive reaction to the Dick test.

SCOPE OF THE WORK.

During the year 1929 an investigation was conducted at the Royal Maternity and Women's Hospital, Glasgow, into the value of the Dick test—i.e., the cutaneous reaction to the intradermal injection of scarlatinal streptococcus toxin—as an index of susceptibility to puerperal sepsis. Because of the commonly expressed view that the toxins produced by the hæmolytic streptococci causing scarlatina and puerperal fever are identical, it was thought that sensitiveness to the scarlatinal toxin might indicate susceptibility to puerperal sepsis, and, if this were so, that the Dick test might serve as a guide for the prophylactic immunisation of susceptible cases.

The Dick test was performed in a series of 600 pregnant women, either during labour or in the last few weeks of pregnancy. Careful histories were taken on cards specially designed for the investigation, inquiry being made regarding previous streptococcal infection—e.g., scarlet fever, tonsillitis, puerperal sepsis—the obstetric history, and the health during the current pregnancy. Full particulars of the labour and the puerperium were subsequently obtained in 500 cases; a morbid puerperium, even although not notifiable according to the British Medical Association standard, was classed as puerperal sepsis if there was clinical evidence of local

uterine sepsis. Pyrexia due to other causes, such as urinary infection, bronchitis, or operation, was separately classified. A number of Dick-positive reactors who developed pyrexia in the puerperium were retested immediately after the pyrexial period to see if any change in the reaction had occurred. Some of these were again tested six months later.

Method.—The toxin used was the standardised product in use for the Dick test in scarlet fever and was kindly supplied by Dr. R. A. O'Brien, of the Wellcome Physiological Research Laboratories. Initially, two different dilutions of toxin were used, 1/250 and 1/1000, 0·2 c.cm. of each being injected intradermally on the flexor aspect of the left forearm about three inches apart. On the other arm an injection of 0·2 c.cm. of heated toxin served as a control. A positive result was indicated by an area of redness, at least 10 mm. in diameter, appearing within 30 hours, and in the subsequent analysis one plus represents 10–20 mm., two plus 20–30 mm., and so on. In order to determine the optimum dilution of toxin an analysis was made of the first 200 cases in whom the two strengths of toxin, 1/250 and 1/1000, were used. Of these only 16 (8 per cent.) were positive with 1/1000 dilution, whereas 43 (21·5 per cent.) were positive with 1/250 dilution. In all cases where the 1/250 dilution gave a reaction over two plus there was a positive reaction with the 1/1000 dilution, but to a smaller extent. The analyses which follow have, therefore, been based on the results obtained with the stronger dilution of toxin for two reasons: (1) too small a proportion of the women gave a positive reaction with the weaker dilution, and (2) the extent of the reaction with the stronger dilution (1/250) was a measure of the degree of susceptibility to streptococcus toxin.

RELATION OF DICK TEST TO AGE AND PARITY.

Of the 600 cases tested, 135 (22·5 per cent.) gave positive reactions; 44 (25 per cent.) of 179 primiparæ and 91 (21·5 per cent.) of 421 multiparæ. A division of the cases into three age-groups, 15–25, 26–35, and 36–45, showed that the incidence of Dick-positive reactions did not decrease with advancing years either in primiparæ or multiparæ. The impression was formed, while doing the tests, that more marked reactions were obtained in primiparæ than in multiparæ. Consequently the Dick-positive cases were divided into two groups according to the intensity of the reaction: (*a*) those of 1–2 plus and (*b*) those of 3 plus or over. It was found that 39 per cent. of the primiparæ and only 17 per cent. of the multiparæ gave a reaction of 3 plus or over. Primiparæ, however, belong mostly to the youngest age-group, and a more detailed analysis was made to find whether age or parity was the more important factor in determining the intensity of the reaction. In the last column of Table I. it is seen that in multiparæ the percentage of strong reactors diminished steadily from the youngest to the oldest age-group, whereas the primiparæ showed no fall in the percentage of strong reactors in the older age-group. This suggests that the decrease in sensitiveness which occurs with advancing years is due to increased parity rather than to greater age.

If susceptibility to scarlatinal streptococcus toxin is an indication of susceptibility to puerperal sepsis, the preceding analysis would suggest that the incidence of sepsis should be greater in primiparæ than in multiparæ. When 225 patients, in whom the health was good and the delivery normal, were analysed it was found that the sepsis rate in primiparæ was high (26 per cent.),* and was the same for the first two age-groups, whereas in multiparæ it was 11, 7, and 6 per cent. in the first, second, and third age-groups respectively. Of course, in primiparæ spontaneous deliveries which are recorded as being free from lacerations will be accompanied by more unnoticed bruising than spontaneous deliveries in multiparæ, which fact in itself might tend to increase the sepsis rate among primiparæ. However, the correspondence between these figures and those recorded from the previous analysis of the intensity of the reaction to the Dick test (Table I.) might suggest that there exists some relationship between a marked degree of sensitiveness to the streptococcus toxin and a liability to puerperal sepsis. But an analysis of the puerperia of 25 women in whom the Dick reaction was three plus or over showed that there was no sepsis in 17 in whom the health was good and the delivery normal, and no sepsis in seven others where there were predisposing factors, either ill-health or difficult delivery, while one woman who died—probably of sepsis—had both ill-health and a difficult delivery. Thus there was no evidence from this small number of cases that a high degree of sensitivity to the Dick toxin indicates a similar degree of susceptibility to puerperal sepsis.

* This high figure is explained by the fact that even the slightest degrees of sepsis are included.

TABLE I.—*Incidence and Intensity of Dick Reaction in Primiparæ and Multiparæ in Various Age-groups.*

Age-groups.	Primip.	1 and 2 +	3 + or over.	Multip.	1 and 2 +	3 + or over.
		%	%		%	%
15–25	108	13 (12)	11 (10·2)	89	8 (9)	6 (6·6)
26–35	64	11 (17·5)	7 (10·9)	236	52 (22)	7 (3)
36–45	7	2	0	96	16 (16·6)	2 (2)
—	179	—	—	421	—	—

RELATION OF DICK TEST TO PREVIOUS STREPTOCOCCAL INFECTION.

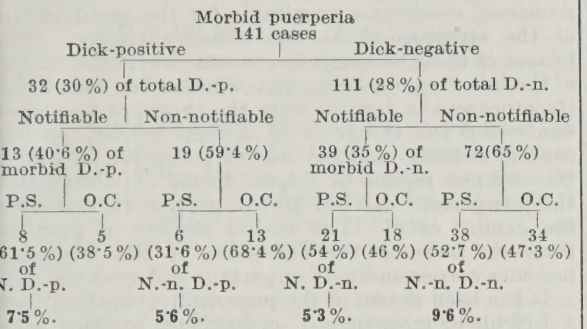
Susceptibility to scarlatinal streptococcus toxin does not appear to be influenced by previous streptococcal infection, if the histories obtainable from this class of patient be accepted. The percentage of positive reactors was the same in patients giving a history of scarlet fever or repeated attacks of tonsillitis as in those who gave no such history: 23 per cent. in the former group and 22 per cent. in the latter. Histories of undoubted puerperal sepsis were obtained in 26 cases, of whom 5 (19 per cent.) were Dick positive. Of course, only the more severe puerperal infections would be recognised as such by the patients. The puerperia of 23 of these cases were observed and only one woman developed puerperal sepsis. These figures are insufficient to decide whether or not a previous puerperal infection protects a woman against subsequent puerperal sepsis.

Dick Test in Relation to Puerperal Sepsis.

Of the 500 cases followed throughout the puerperium the Dick test was positive in 21 per cent.; of these, 12·2 per cent. had puerperal sepsis, according to the British Medical Association standard, compared with 9·4 per cent. of the negative reactors. It was thought advisable to make a further analysis of all cases of sepsis, whether notifiable or not, as puerperal sepsis may occur with very little temperature—e.g., local uterine sepsis, white leg, and low-grade pelvic cellulitis. This analysis (Table II.) showed first that almost as big a proportion of Dick-negative as Dick-positive cases had morbid puerperia. The next subdivision into notifiable and non-notifiable pyrexia showed that the percentage of notifiable cases is slightly higher in the Dick-positive than in the Dick-negative group. Some of the notifiable puerperal pyrexias, however, were due to such causes as urinary infection, bronchitis, and staphylococcal breast abscess, so that a further subdivision

vas made in each group into true puerperal sepsis nd pyrexia due to other causes. The cases of true uerperal sepsis have been expressed as percentages f the total Dick-positive and Dick-negative cases see figures at the foot of Table II.); 8 (7·5 per cent.)

TABLE II.—*Analysis of the Morbid Cases.*



D.-p. = Dick-positive cases; D.-n. = Dick-negative.
N. = Notifiable; N.-n. = Non-notifiable.
P.S. = Puerperal sepsis. O.C. = Other causes.

of the 106 Dick-positive cases developed notifiable puerperal sepsis, and 6 (5·6 per cent.) developed non-notifiable puerperal sepsis—a total of 13·1 per cent.; 21 (5·3 per cent.) of 394 Dick-negative cases developed notifiable puerperal sepsis, and 38 (9·6 per cent.) developed non-notifiable puerperal sepsis—a total of 14·9 per cent. Since statistically there is no significant difference between these figures, it would seem that pregnant women who react positively to the Dick test are no more liable to puerperal sepsis than are negative reactors.

The figures resulting from the division into notifiable and non-notifiable puerperal sepsis suggested that if infection occurs it tends to be more severe in the Dick-positive cases. A more detailed analysis of the cases of notifiable puerperal sepsis in both Dick-positive and Dick-negative groups rather supported that view (Table III.); 3 out of 8 Dick-positive cases died of puerperal sepsis compared with 1 out of 21 Dick-negative cases, one of the latter deaths being due to peritonitis caused by leakage from an infected fibroid. Six cases of puerperal septicæmia recovered; of these 2 were Dick-positive and 4 were Dick negative. Again, 7 out of 8 (or 87 per cent.) of the Dick-positive notifiable cases were suffering from severe sepsis as compared with 10 out of 21 (or 47 per cent.) of the Dick-negative notifiable cases (Table III.). In this small series

TABLE III.—*Details of Patients who Developed Notifiable Puerperal Sepsis.*

Dick-positive cases (8).			Dick-negative cases (*cont.*)		
Acute sepsis with peritonitis, death		3	Infection of fibroid, death	1	
Septicæmia, recovered	2		Septicæmia, severe, recovered	4	
Parametritis	2	7	Parametritis, recovered	2	10
Severe local sepsis	1		White leg	1	
Dick-negative cases (21).			Abdominal abscess after C.S.	1	
Acute sepsis with peritonitis, death	2		Local sepsis	9	11
Cellulitis, embolism, death	1				

factors such as poor health of the patient and a difficult delivery, which predispose to sepsis, would affect the figures. On analysis these factors were found to be approximately equal in both Dick-positive and Dick-negative groups, and could therefore be ignored.

REACTION TO DICK TEST AFTER PUERPERAL SEPSIS.

Twenty-one women who had given a positive reaction to the Dick test were retested in the puerperium; 13 of them remained positive, and of these two had puerperal pyrexia due to a coliform pyuria. In the remaining eight cases there was sepsis, slight in six and severe in two, and in all of them the reaction to the Dick test became negative. An attempt was made to retest all these patients six months later, but unfortunately only three of those who had become Dick negative in the puerperium could be traced. One was again Dick positive; the other two remained Dick negative. All the women who had been Dick positive before and after delivery still reacted positively.

PUERPERAL MORBIDITY IN RELATION TO ILL-HEALTH AND DIFFICULT LABOUR.

The relative importance as factors in the production of puerperal sepsis of the reaction to the Dick test, the general health of the patient, and the type of delivery is indicated in Table IV. The figures

TABLE IV.—*Relative Importance of Reaction to Dick Test, Bad General Health, and Difficult Delivery in Puerperal Sepsis.*

Factors present.	Dick positive.	Dick negative.
Good health and normal delivery.	Afebrile .. 47 Febrile .. 6 (11·3%)	Afebrile .. 237 Febrile .. 22 (8·5%)
Bad health only.	Afebrile .. 11 Febrile .. 2 (15·4%)	Afebrile .. 24 Febrile .. 9 (27·5%)
Difficult delivery only.	Afebrile .. 23 Febrile .. 8 (34·7%)	Afebrile .. 37 Febrile .. 43 (54%)
Bad health and difficult delivery.	Afebrile .. 2 Febrile .. 7 (77%)	Afebrile .. 7 Febrile .. 17 (70%)

emphasise the fact that a difficult delivery was the most important single factor and bad general health the next; when both these factors were present 70 per cent. of the women had morbid puerperia. A positive reaction to the Dick test was the least important factor predisposing to sepsis. This was emphasised by the finding that if, from the 500 cases with a notifiable sepsis rate of 12·8 per cent., those women with good health and normal delivery (225 cases) were abstracted, only 4 (1·7 per cent.) of the latter had notifiable sepsis and all four had perineal tears requiring several silkworm sutures; two of them were Dick positive and two Dick negative. The rate of notifiable sepsis for the remainder of the 500 cases was 22 per cent.

Discussion.

Since this investigation was commenced several papers have appeared on the subject. Burt-White, Colebrook, and others (1930) gave the results of 1000 cases investigated at the London Maternity and Queen Charlotte's Hospitals. They suggested that women with a Dick-positive reaction have an increased susceptibility to puerperal sepsis, since the morbidity among Dick-positive cases was 41 per cent. greater than in the Dick-negative group. In our investigation there was very little difference between the respective morbidity-rates of the Dick-positive and Dick-negative groups. In their series cervical swabs were taken in morbid cases but in

only 8 was the *S. pyogenes* isolated: in 2 out of 770 Dick-negative cases (0·26 per cent.) and in 6 out of 230 Dick-positive cases (2·6 per cent.). The authors therefore state that the incidence of *S. pyogenes* infection in the puerperium is ten times greater in Dick-positive than in Dick-negative cases. However, the fact that hæmolytic streptococci were not isolated from cervical swabs does not prove conclusively that the streptococcus was not the infecting organism. For example, in our series the Dick reaction became negative when Dick-positive patients who had sepsis, however slight, were retested after the pyrexia subsided, but it remained positive in those who had a coliform urinary infection. The incidence, in Burt-White and Colebrook's series, of only one case in which a few colonies of *S. pyogenes* were isolated out of 38 Dick-negative cases with morbid puerperia is at variance with our findings, where 10 out of 21 Dick-negative cases (47 per cent.) with notifiable puerperal sepsis had a type of infection so severe as almost certainly to be due to the hæmolytic streptococcus.

Salmond and Turner (Royal Free Hospital) and Stent (St. Mary's Hospital, Manchester) have also recorded their results obtained in two series of 533 and 500 pregnant women respectively. In neither investigation was there significant evidence to support the view that a positive reaction to scarlatinal toxin is an index of susceptibility to puerperal sepsis. Stent, who divided her morbid cases into three grades of severity, found a higher incidence of severe sepsis in the Dick-positive than in the Dick-negative group: 4 out of 14 as compared with 5 out of 46. Although these figures were not emphasised by the author on account of the small numbers, they correspond with our results, which show that, out of eight Dick-positive cases with notifiable puerperal sepsis, seven (87 per cent.) had severe infections, whereas only 10 out of 21 (47 per cent.) of the similar Dick-negative group had severe sepsis. Theoretical considerations would suggest that these findings may have some significance. Streptococcal antitoxic immunity does not prevent the invasive action of the *S. pyogenes*, as is shown by the occurrence of streptococcal tonsillitis in individuals artificially immunised to streptococcal toxin, but the immunity might be expected to modify the severity of the infection—as in fact it does, for these immunised individuals do not develop scarlet fever. We therefore suggest that, although a negative reaction to the Dick test in a parturient woman does not indicate an insusceptibility to streptococcal infection in the puerperium, it reveals an antitoxic immunity of a degree which may modify the severity of infection and help to localise it should it occur.

PROPHYLAXIS.

It follows that puerperal sepsis may be wholly prevented only if women are protected against the hæmolytic streptococcus itself. Unfortunately the tissues seem to be unable to establish an efficient or permanent barrier against the invasive action of the streptococcus—witness, for example, the recurrences of erysipelas and streptococcal tonsillitis. Thus, a system of immunisation with streptococcal vaccines would probably afford inadequate protection, although Lash (1929) claimed to have reduced the incidence of puerperal sepsis in a series of women who were given a vaccine containing streptococcal toxin plus the killed organism. In our series multiparæ tended to give less intense reactions to the Dick toxin and appeared also to be less susceptible than primiparæ to puerperal infection, facts which might possibly be attributed to a combination of antitoxic immunity plus antibacterial immunity conferred by infection in previous confinements, but was probably due to other causes.

If antistreptococcal immunity cannot be obtained the prophylaxis of puerperal sepsis may be attempted either by preventing access of the hæmolytic streptococcus to the parturient woman or, if that fail, by rendering conditions unsuitable for the proliferation of the streptococci in the woman's tissues. The former of these measures is concerned with the source of the infecting organism, and, whether the hæmolytic streptococcus is derived from the throat of an attendant—and the throat is its natural habitat—or by contagion from another case of puerperal infection, the strictest régime of asepsis during childbirth and the puerperium will not always prevent its access to the genital canal. The second method of prophylaxis—to increase the resistance of the woman—becomes correspondingly important and essential.

It has been shown in the present investigation that a difficult or mismanaged confinement, together with a poor condition of health, greatly increases the woman's susceptibility to puerperal infection. We are entirely in agreement with Young's dictum: "To trauma from interference must be credited the chief agent in the maintenance of sepsis." The obvious remedies are more thorough antenatal care and a better obstetric service. Until this ideal is attained some means of protecting "suspect" cases is desirable. Of course, sepsis may occasionally occur in the absence of predisposing factors. Scarlatinal streptococcus antitoxin has been used successfully in the prophylaxis of scarlet fever; we would accordingly suggest its use in doses of 5–10 c.cm. at the confinement of women who for various reasons are to be regarded as "suspect" cases. In a series of women thus treated (Thomson, Bellshill Hospital—personal communication) the incidence of puerperal infection has been reduced by half. It is to be hoped, however, that if there is an antigenic identity among the strains of puerperal streptococci an antibacterial serum may be produced for prophylactic use against the invasive action of the hæmolytic streptococcus.

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DERBYSHIRE HOSPITALS: INCREASED ACCOMMODATION.—The Derbyshire County Mental Hospital at Mickleover has been enlarged by the addition of 12 houses for medical attendants, a nurses' home, and an admission hospital. The work has cost over £92,000. The nurses' home provides 71 bedrooms and other accommodation. The admission hospital will contain 50 patients on each side, in dormitories and single rooms, and there is a very complete bathing installation.—The employees of Rolls-Royce, Ltd., at a cost of £1000, have endowed a bed in Derby Infirmary. They have in contemplation the provision of a second bed as well as one in the children's hospital. Since 1914 the employees have subscribed £8000 to the infirmary, which during the past year has treated 223 in-patients and 1087 out-patients from the Rolls-Royce Co. at a cost of £1834.—Reviewing the hospital accommodation of Derbyshire, Dr. W. M. Ash, the county medical officer, states that there is much overlapping, and that there are too many instances of a small centre of population possessing two and three, and sometimes more, institutions for the sick, each confining its activities to one type of case or one class of person. "As a general policy," he adds, "there should be one hospital for any area, and the work of that hospital should be as comprehensive as medical and other circumstances permit," and he suggests that the county council should not support small institutions which fall behind in the march of medical progress.

CLINICAL AND LABORATORY NOTES

A CASE OF MEGACOLON

OF MANY YEARS' DURATION WITH UNUSUAL ATTACKS OF PAROXYSMAL TACHYCARDIA.

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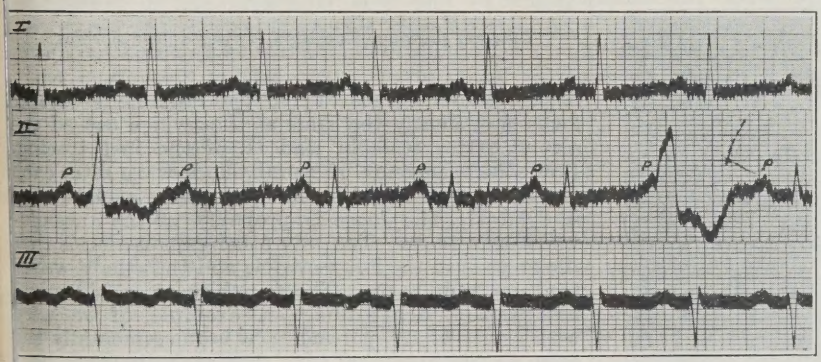
THE essential lesion of the colon described in his case was a volvulus of the sigmoid flexure which had never become so complete as actually to occlude the lumen of the bowel. Gould's "Medical Dictionary" defines volvulus (volvere, to roll) as 'a twisting of the bowel upon itself so as to occlude the lumen. . . .'

The patient was first seen by me in April, 1925; she was then 48 years old. She had been delicate all her life and had suffered from constipation and sickness, especially in childhood. Her present trouble began at 24 years when she saw a consultant for constipation and "nerves"; no cardiac abnormality was noted then. A few years later she had severe gastritis and the heart was said to be irregular and intermittent; she rested for five years, with some improvement. At 31 she had a curious heart attack, said by one doctor to be functional but by another to be serious, and she was continually in bed after this. In 1914 she saw a London consultant who diagnosed a congenital heart lesion.

When I saw her first she had been confined either to her room or to her bed for ten years. She was lying on a couch but, even so, showed slight dyspnœa. There was some pallor of the face, the general nutrition was good, and the teeth were sound, but there was marked pyorrhœa of the gums. The heart was slightly enlarged, there were no bruits, the sounds were tic-tac, the pulse-rate was 150 to 160, and the blood pressure 150/110. On standing up for some minutes the toes, then the feet, and then the legs became at first congested, then a deep red, then definitely cyanosed. This congestion gradually increased until at the end of ten minutes the upper part of the thighs was a deep red, and the colour increased downwards to a deep purple. The patient informed me that if she stood for much longer the congestion extended up as high as the upper part of the chest, when she would also have marked œdema of the left leg and slight œdema of the left hand and right leg. The abdomen was not distended but the percussion note all over was hyper-resonant.

Electrocardiogram 1.

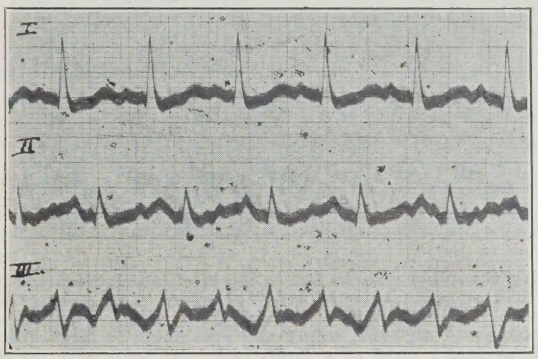


He was only having two motions a week and these only with the aid of suppositories.

In July, 1925, she was brought to a nursing-home and the first electrocardiogram was taken. This shows a left ventricular preponderance, T 3 inverted, and two extrasystoles in lead II. Whilst in the nursing home it became evident that there was something seriously wrong with the intestinal tract; very large enemata failed to secure any result, and the motions suggested that the intestinal contents were being held up in some part of the tract. X-ray examinations were then made by Dr. J. S. Levack of Norwich.

The stomach appeared as an elongated organ extending from the left side to the extreme right of the abdomen; it was situated high up, under the costal margin, and curved over a huge distended coil of intestine. The passage of the barium meal was not unduly delayed and in five hours it had reached the cæcum. In 24 hours the barium was seen passing up the ascending colon into the transverse and descending parts, which also were situated above and around the aforementioned distended coils, but it did not reach the rectum until the end of 48 hours. A barium enema was then given, but the ordinary quantities failed to reach the ascending colon, and not until ten pints had been administered was this part of the colon filled. These distended coils were seen in all the films, but the barium was not observed to pass in or out of them at any time.

Electrocardiogram 2.



On these findings a diagnosis was made of incomplete volvulus of the sigmoid flexure. The patient was seen by Sir Hamilton Ballance, who advised an exploratory laparotomy with a view to resection of the volvulus if this was found to be feasible, but the patient refused to undergo any operative procedure.

As the result of treatment by colonic lavage, massage, liquid paraffin preparations, and dental extractions, the condition of the patient was greatly improved; she was able to be up and about to a limited extent, there was only slight œdema of the legs after being up for some hours, and only slight discoloration of the legs after standing still for ten minutes; there was a loose action of the bowels either daily or every other day.

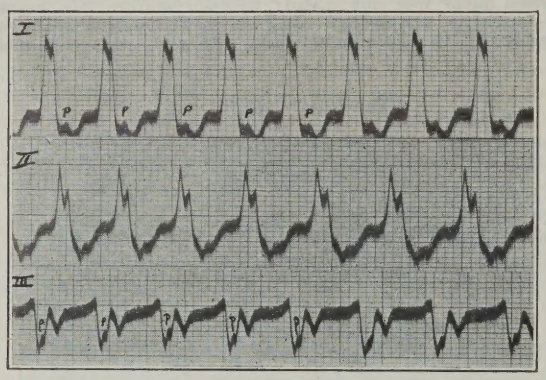
It was remarkable that at no time did the contour of the abdomen suggest any undue distension. Palpation sometimes revealed a certain degree of tension, and the percussion note was always tympanitic, especially in the upper part of the abdomen and the lower half of the chest. This suggested that the pressure of the distended guts was exerted in a vertical rather than in an anteroposterior plane.

The patient returned home in October and led a comparatively active life until March, 1926, when she began to have curious fainting attacks and periods of irregular tachycardia. She came into the nursing-home again in May, 1927. She described very vividly three different types of heart attacks. The first type she called "barge-poling"; during this phase the pulse was extremely irregular, the whole chest heaving with the violence of the heart's action, and the rate varying between 140 and 170. The next type was described as "quick-beating," at a rate of 195. The third type was known as "hitching," and very aptly so. The first type was the most uncomfortable, but was brief and transitory, leading to type 2, during which she was able to be up and about, write letters, and do other work at a slow pace, or to type 3, during which she had to rest. The second type was the most prolonged and sometimes lasted

as long as 24 hours. The three types are represented in electrocardiograms 2, 3, and 4.

During the next three years these attacks of tachycardia slowly but surely increased in frequency, duration, and severity. In spite of them the patient kept up and about

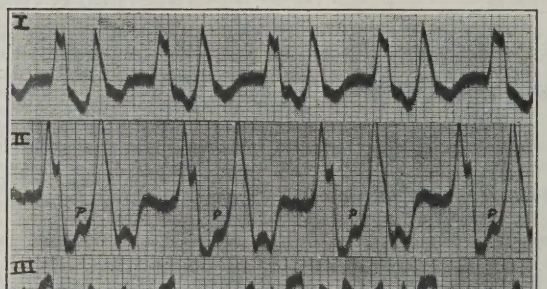
Electrocardiogram 3.



during the minor attacks and in the brief interludes between the bad ones, and even during the severe attacks she was able to do much writing, resting on a couch. Quinidine sulphate and digitalis, singly and combined, in large doses and for many days at a time, failed to bring any relief, but the French tinct. iodi, taken in milk in ten-minim doses thrice daily for a month at a time, proved to be of great value. The bowels were relieved by enemata, but as time went on the amount of fluid had to be increased to 5 pints or more before they were effectual. During her last stay in the nursing-home in November, 1929, during the course of her daily massage, she had a severe fainting attack followed by general convulsions and loss of consciousness for some hours, due probably to a cerebral embolus. In the early part of 1930 the attacks of tachycardia were almost continuous, and early one morning in April she was found to have died quietly about one hour after she had been seen to be sleeping peacefully. A partial post-mortem was allowed.

On opening the abdomen and thorax the following disposition of the viscera was observed (see Diagram). A double loop or volvulus occupied the greater part of the abdomen, the distal part arising from the sigmoid flexure and the proximal part ending close to the distal end, in the lower part of the ascending colon. The descending and transverse parts of the colon were twice

Electrocardiogram 4.



(and in parts three times) the normal size and the latter was lying high up under the costal margin. Above this again was seen the stomach, the major portion of which was on the left side at the level of the fifth to the seventh ribs, but the duodenal portion was enormously elongated, stretching across to the right seventh rib in the mid-clavicular line. The upper limit of the diaphragm on the right side was at the third rib, the liver occupying the space below this, and on the left side was at the fifth rib. The heart was slightly larger than normal, the muscle appeared to have a good colour and consistency, and the valves were normal.

From the close conjunction of the distal and proximal ends of the volvulus it would appear that the operation for its removal, as suggested in 1925, would have been comparatively safe and probably effectual, especially since the volvulus was remarkably free from adhesions to surrounding structures.

The electrocardiograms are of unusual types. The first, taken in 1925, shows a normal sinus rhythm and left ventricular preponderance. In lead II. are two extrasystoles, each of a different type and both occurring after a normal P-wave, thus replacing the usual ventricular sequence. In the second, leads I. and II. show a normal sinus rhythm of 135–140 per min., but lead III. shows an anomalous paroxysmal tachycardia of a rate of 217 per min. The third, taken in 1927 during an attack of paroxysmal tachy-

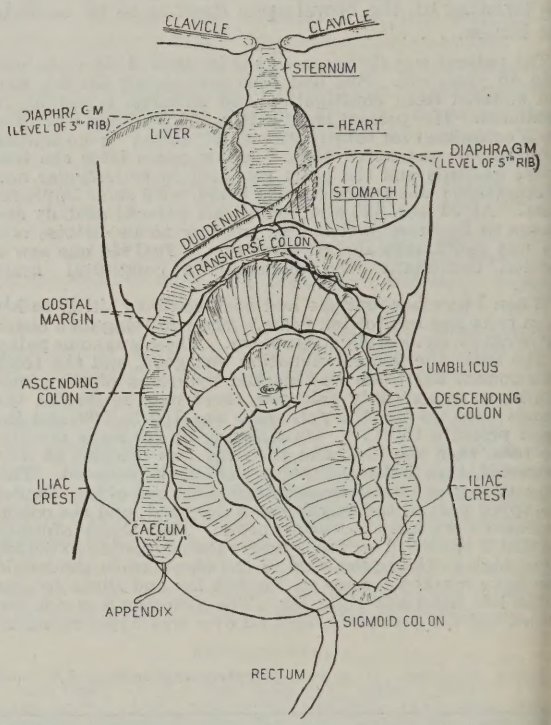


Diagram showing disposition of viscera post mortem.

cardia, shows a rate of 195 per min. The ectopic focus is evidently the same as that which caused the second extrasystole in lead II. of the first tracing. From the occurrence of a probable P-wave after each R-wave in lead I. and in the up-stroke of each S-wave in lead III. the focus is probably in the auriculo-ventricular node. The only other explanation is that the focus is in the left ventricle and that the P-waves are retrograde beats. The fourth shows a bigeminal paroxysmal tachycardia, an example of re-entry with a rate of 195 per min.; it is fundamentally the same as the preceding type, but each alternate beat is replaced by an extrasystole arising from a different focus, probably the same as that which caused the first extrasystole in lead II. of the first electrocardiogram.

These types persisted until the last records taken in 1929. The only type not recorded was one described as a "slow hitch," during which the pulse-rate was 60 to 80; the patient was completely incapacitated, and the venous polygraphic record suggested a flutter at a very high rate.

HERPES ZOSTER OF THE FIFTH LUMBAR NERVE.

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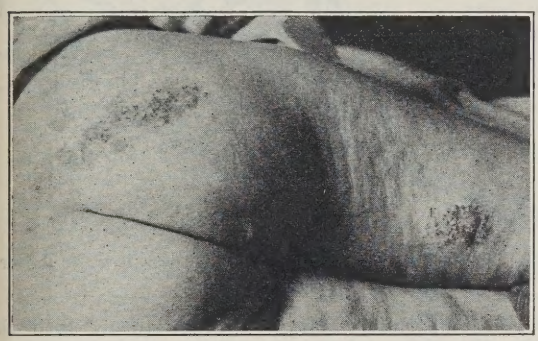
The following case, seen in consultation with Mr. A. de V. Blathwayt on August 14th, seems worthy of record. It was that of a lady, aged 74, suffering from typical herpes zoster, evidently resulting from inflammation of the fifth lumbar nerve root ganglion on the right side. The distribution of vesicles was as follows. They covered the dorsum of the foot and of the first three toes, and the inner half of the fourth toe; vesicles were also present on the ventral aspect of the first three toes. In addition, they occupied the whole of the outer surface of the leg below the knee, two particularly prominent collections



Photograph of buttock and thigh, showing lesions.

being present in the neighbourhood of the head of the fibula. But what is of peculiar interest is the fact that in the very centre of the posterior aspect of the thigh, midway between the fold of the buttock and that of the knee, was situated an oval patch of vesicles measuring 2½ in. from above downwards, and about 1¼ in. from side to side: higher up again was another similar but larger patch commencing 1 in. above the termination of the internatal cleft and extending downwards and outwards, across the buttock, for some 6 in. and being about 2¼ in. in breadth.

The importance of this case consists in the light it throws on the sensory distribution of the fifth lumbar nerve, since it is extremely improbable that more than one nerve root was involved.

Most authorities deny any sensory distribution to the fifth lumbar nerve root above the knee, and this has been a great obstacle to complete acceptance of Prof. J. A. Sicard's view that one of the chief causes of sciatica is irritation of the fifth lumbar nerve during its passage through the intervertebral canal (funiculitis), or of Prof. V. Putti's that sciatica is symptomatic of inflammation of the joints between the articular processes of the lumbar vertebræ and between the fifth lumbar vertebra and sacrum. Neither of these theories satisfactorily accounts for the pain in the back of the thigh, usually the most prominent symptom in sciatica, if innervation of this part is from the second sacral nerve only, as the text-books would have us believe. But if (as this case suggests) the fifth lumbar nerve in some persons, and perhaps in many, reaches the surface in this region, to however small an extent, one great difficulty in accepting the explanations of these distinguished observers is removed. Probably herpes zoster is a more trustworthy guide to sensory distribution than information gleaned from sensory loss. Especially would this be so in the case of a small area such as that found on the back of this patient's thigh, since there might be considerable overlapping by other sensory roots.

It is of interest that this patient had had an attack of sciatica in the opposite (left) limb 12 years ago, which lasted three months.

SPIROCHÆTES IN THE FÆCES OF PATIENTS WITH BLACKWATER FEVER.

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The most striking feature in the symptomatology of blackwater fever is the predominance of the biliary symptoms—namely, bilious vomiting, icteric colouring of the skin, and bilious fæces. This fact led me when trying to find clues to the ætiology of this fever to examine the bile.

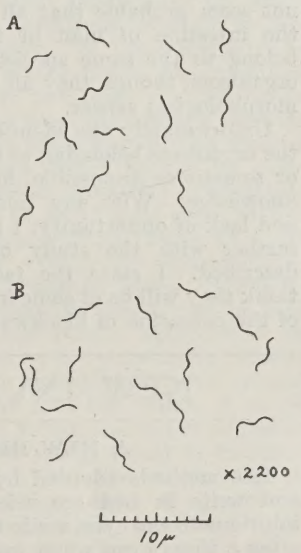
In December, 1928, in Tete, Portuguese East Africa, I made an examination on a patient who had died six hours previously with a severe attack of this disease; the gall-bladder was punctured aseptically, and I aspirated some bile with a syringe. Films were made from this bile, dried, fixed by heat and stained with carbol-fuchsin. They showed innumerable spirochætes. In all patients suffering from this disease whom I had the opportunity of seeing during the next three months, I looked for the parasites in the blood, urine, and fæces with the following results:—

(*a*) In all the cases of blackwater fever submitted to investigation (four in Tete and three in Lourenço Marques) I found spirochætes in the fæces. The parasites were abundant during the feverish stage of the disease but began to diminish as soon as the patients improved, and disappeared altogether in every case when the patients entered on convalescence.

(*b*) I could not demonstrate any spirochætes in either the blood or urine of the patients.

(*c*) In the fæces of a few cases (four) of quinine hæmoglobinuria (at the beginning indistinguishable, by its symptoms, from true blackwater fever), I was unable to find any spirochætes.

I examined at the same time the fæces of patients suffering from other diseases, and found that: (*a*) in 14 white patients (with intestinal complaints) I could not demonstrate the presence of spirochætes in the fæces; (*b*) in 23 natives (all suffering from intestinal troubles) I found spirochætes in the fæces of six.



Spirochætes seen in stained preparations. A = Patient with blackwater fever, Tete's Hospital. B = Patient with blackwater fever, Lourenço Marques Hospital.

The spirochætes found in the fæces (and bile) of the patients with blackwater fever are small filaments measuring from 3 to 7 μ in length, very thin and with one to four spirals. The stain that gave the best results was diluted Ziehl's carbol-fuchsin, allowed to

act for ten minutes. The figure shows some of the forms found in the stained preparations.[1]

The morphological characters of this spirochæte allows us to classify it in the genus *Treponema eugyrata* Werner, 1909. The spirochætes found in the fæces of the sick natives were in two cases indistinguishable morphologically from the parasites seen in the fæces of the white men suffering from blackwater fever.

CONCLUSIONS.

Has this spirochæte any connexion with the ætiology of blackwater fever or is it only one form of the *T. eugyrata*, a normal saprophyte of the human stools? The idea of considering blackwater fever as a spirochætal disease fits in well with its symptomatology, which is similar to that of other pathological conditions with a proved spirochætal causation—namely, spirochætosis icterohæmorrhagica,—due to the *Leptospira icterohæmorrhagiæ*. Schüffner (1918) was the first investigator to associate the origin of blackwater fever with the symptomatology of a case of spirochætosis in a native in Java. Blanchard and Lefrou (1922) have described the appearance of a specific spirochæte in the blood (deposit of the third centrifugation) of white patients suffering from blackwater fever in the French Congo. These results have not, however, been confirmed by J. G. Thomson (1924) in Rhodesia.

The morphology of the parasite described here cannot furnish any definite conclusions on its pathogenic or saprophytic nature. It is a fact that in the fæces of normal men and animals there have been described spirochætes belonging chiefly to the species *T. eugyrata* and *T. stenogyrata* Werner, but it is true also that various investigators (Dantec, Fantham, Thomson) have described parasites of a similar morphology (the same species?) associated with different pathological conditions occurring in man (dysentery, anæmia, rheumatoid arthritis). It does not seem probable that all the spirochætes found in the intestine of man in these different conditions belong to the same species of innocent saprophytic organisms, though they all seem to have an identical morphological aspect.

Unfortunately the identification and separation of the organisms belonging to this group is very difficult, or sometimes impossible, in the present state of our knowledge. With my limited laboratory resources and lack of opportunity, I have not been able to go further with the study of the spirochætes above described. I state the facts I have found, as I think they will be of some interest in the investigation of the causation of blackwater fever.

[1] I owe the drawing of these pictures to the kindness of Dr. J. G. Thomson, School of Tropical Medicine, London, to whom I am much indebted.

NEW INVENTIONS

A NEW BED DESK.

THE methods adopted by those who wish to read and write in bed are scientifically bad and often injurious to the eyes, while the discomfort engendered after a time, even when well propped up by pillows, makes both reading and writing, and especially the latter, only possible for limited periods. In both reading and writing the chief difficulty lies in securing a steady support for the book or writing pad at a convenient angle, which must be varied according to the position of the head and shoulders when propped upon pillows. In addition, so far as writing is concerned, a support is required for the right arm and hand, for writing without such support is difficult and soon becomes fatiguing. With the help of Messrs. Hamblin I have designed a bed reading and writing desk, which does away with faulty and uncomfortable attitudes, and makes reading and writing in bed as easy as when sitting in an armchair or at a table. I hope that the apparatus will prove to be a great comfort to invalids and the bedridden, and also to that large section of the community which habitually reads itself to sleep.

The main feature of the design is a stout light board of suitable height and breadth, which is

The bed desk in use; the angle of the desk is made flatter for writing.

shaped elliptically below in order to fit into the body, the right side of the ellipse being lengthened to form a slightly curved tail which runs away behind the body and rests with its lower edge on the bed. The board thus fits the body as the patient reclines propped up by pillows, the tail of the board forming a support for the right arm of the patient when writing. This is shown quite clearly in the drawing of the desk in actual use (see Figure). The support for the board is furnished in a simple fashion in two ways. On the right side there is a double sliding arrangement which is clamped by a screw, easy to reach and to manipulate. This slide regulates the angle at which the board is supported, and at the same time affords a horizontal bearing along the bed, no matter at what angle the board may be clamped, keeping the board absolutely secure and fixed. On the opposite side of the board there is a non-sliding support also clamped by a screw. This support projects from the board at an angle easily regulated by the patient, so that its lower end rests comfortable on the left side of the bed. The object of this second support is to counteract the tendency of the board to be pushed over to the left by the pressure of the right arm when writing, and to give extra stability to the board when it is supporting a book. The apparatus can be folded up flat when not in use, and erected and folded up again by the patient with little effort.

The bed desk has been very well made by Messrs. Hamblin, Ltd., of 15, Wigmore-street, W., who have patented it and have registered for it the name of the "Kangaroo" bed desk, because it "supports itself by its tail." The desk can be supplied with the tail on the left side and the supports reversed for a person who can use only the left hand for writing or turning the leaves of a book.

Harley-street, W. ARNOLD LAWSON, F.R.C.S. Eng.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING IN WINNIPEG.

(*Continued from p. 802.*)

SECTION OF DISEASES OF CHILDREN.

The President, Dr. ROBERT HUTCHISON (London), being in the chair, Dr. K. D. WILKINSON (Birmingham) opened a discussion on

Colon Bacillus Infections.

As a clinician, he said, he was familiar with a *B. coli* infection of the urinary tract, frequently seen in children in an acute, chronic, or recurrent form, commoner in girls than in boys, and not often fatal. The name pyelitis had been given to this condition, and although he was unable to prove that it was always a pyelitis, he felt justified in holding the opinion that it was not always part of a septicæmia or evidence of a nephritis—as some pathologists maintained. Many cases, especially the milder ones, might easily be overlooked if the urine of patients were not systematically examined, with a microscopic investigation of the sediment and culture of a fresh specimen, and the difficulty of obtaining specimens from infants and young children in general practice, with the consequent neglect to examine the urine, doubtless resulted in the omission to diagnose many of the less severe cases. The typical urine is pale and opalescent, contains a varying amount of protein, and microscopically shows pus and *B. coli*. Clinically the disease may start as early as the first week of life (some say it may even be present at birth), gradually becomes more frequent, and tends to diminish in frequency after about the eighth year. At first boys and girls are about equally affected, but after the age of one year the preponderance of girl patients gradually increases, though recent authors have found that the preponderance of girls over boys is not so great as was formerly thought to be the case. Of 117 cases—probably severe cases as they all needed hospital treatment—seen at the Birmingham Children's Hospital only nine (or 7·7 per cent.) died, which he held was weighty evidence against the recent pathological view that these cases were all due to a severe septicæmic condition with renal infection and possibly abscess formation.

Cases might be acute, subacute, or chronic, the acute often starting with a rigor or convulsions, high fever, and severe general disturbance, so that pneumonia, meningitis, or a typhoid infection may be suspected. If the possibility of pyelitis is borne in mind, and the urine examined, the diagnosis is usually readily made in these cases. In older children the symptoms and signs are less puzzling, as localising symptoms, such as tenderness in the loin, frequency of micturition, or dysuria, are found present in the majority of cases. When, however, unusual symptoms, such as vomiting, increased respiration-rate, vague aches and pains, or abdominal discomfort or tenderness are present an erroneous diagnosis of acidosis, pneumonia, rheumatism, appendicitis, or abdominal tuberculosis may be made. Subacute or recurrent cases, with fever and attacks of vomiting, simulating cyclical vomiting, may remain undiagnosed until pus and *B. coli* are found in the urine. Chronic cases may show slight signs of a general upset, with perhaps slight fever, general lassitude, anorexia, or nervousness—symptoms apparently quite unconnected with the urinary tract.

As a general rule, acute cases of all ages did well under strict treatment, though some failed to respond at all, and others did only moderately well, and became subacute or chronic. In cases which were subacute when first seen treatment had to be more prolonged to effect a cure, and in some cases what ever line of treatment was adopted proved valueless—the bacilluria persisted, and often such cases showed evidence of damage to the kidneys—the presence of casts in the urine, a high blood-urea or poor urea concentration. The prognosis in such cases was bad. In his experience there were four important requisites in the successful treatment of these cases: (1) As early diagnosis as possible, with institution of the correct treatment, (2) Rest in bed, until the bacilli have disappeared from the urine. (3) The administration of alkalis, such as plentiful doses of sodium bicarbonate or potassium citrate, given with syrup and some flavouring agent. For some years he had been in the habit of treating these cases by alternate alkaline and acid medication whereby the pH of the urine was being constantly varied; first alkalis are given till the urine is definitely alkaline, then a mixture of hexamine with acid sodium phosphate until the urine becomes acid, when the sequence is repeated. This line of treatment is inimical to the *B. coli* as well as to other urinary micro-organisms, but he did not think that the hexamine itself did much good; neither did the other antiseptics, salol or hexyl resorcinol, taken by mouth or those usually recommended to be tried locally. (4) The fourth point in the treatment is the flushing of the kidneys by a large fluid intake—as much as 50 or 60 or more ounces of fluid a day. In his experience vaccines occasionally seemed to be useful, but far more often proved disappointing.

According to McKhann 20 per cent. of children with chronic pyuria showed some abnormality of the urinary tract, which either predisposed the tract to infection or enabled a fortuitous infection to persist owing to the abnormality. In 153 consecutive post-mortems on children Bigler found abnormalities of the urinary tract in 13 per cent. In this series of 20 cases, only four died from the urinary tract infection, and as the eldest of these was only six weeks old, congenital abnormalities could hardly be said to have played a large part in this series in predisposing to urinary infection. In all chronic cases of pyuria Dr. Wilkinson recommended the taking of a cystogram and a further cystoscopic examination in doubtful or definitely abnormal cases. Bowel infections and chronic appendicitis which may be accompanied by pyuria should receive appropriate treatment. He then referred to the pathological studies of Chown and of Wilson and Schloss, who concluded from their observations that the pyuria of so-called pyelitis was really due to an interstitial suppurative nephritis, and that there was generally no evidence of pyelitis. In his opinion the cases studied by those authors were not ordinary cases of pyelitis, but instances of severe septicæmic conditions due to other micro-organisms, and that the *B. coli* was probably a secondary invader. He referred also to Helmholz's experimental work on rabbits, which showed that spontaneous *B. coli* infections occur in these animals, and that intravenous injections of *B. coli* may give rise to kidney abscesses, though these do not occur in the spontaneous infection.

In adults, said Dr. Wilkinson, *B. coli* infections were much commoner in women than in men, and furthermore, they generally produced little upset and were probably often missed. He believed that the facts pointed definitely to an ascending

rather than to a blood infection, and that they supported the clinical findings of pædiatricians that pyelitis is generally an ascending infection, with a correspondingly greater incidence in girls.

SEVERAL PROBLEMS TO SOLVE.

Dr. DAVID NABARRO (London) said it would be interesting to compare current views with those prevalent in 1910, when the same subject was discussed at the seventy-eighth annual meeting of the Association. There were, he said, several interesting problems to solve. (1) *B. coli* was normally a harmless intestinal saprophyte; what was it that made it pathogenic in the bowel or enabled it to leave the bowel for foreign parts? It might be that there were different strains—e.g., hæmolytic and non-hæmolytic (Dudgeon, Wordley, and Bawtree), others with variations in sugar fermentative power, in agglutinability and so forth, which might perhaps be associated with variations in pathogenicity. (2) By what route did the *B. coli* travel from its normal situation to the urinary passages? There were three possibilities, each of which had its supporters: (*a*) directly, via the urethra, the so-called ascending mode of infection, favoured by Dr. Wilkinson among others; (*b*) via the blood stream; and (*c*) via the lymphatics.

Blood culture experiments he had made some years ago on cases of pyuria and bacilluria with negative results had convinced him that the infection was probably not, as a rule, blood borne. He also cited Helmholz's recent paper, with the conclusions that author drew from his experiments—the most important of which was that in the rabbit the infection was of the ascending type, and that in children infections with the *B. coli* took place in the same way. Bugbee, Wilson and Schloss, Chown, and others, on the other hand, think that the infection is blood borne in those cases in which no congenital abnormality interferes with the urinary flow. In Dr. Nabarro's view a blood-borne infection was possible in a small proportion of the cases, but in the majority of the cases the infection of the bladder was probably direct (ascending) and the infection reached the kidneys via the peri-ureteral lymphatics.

Turning to the pathological anatomy of the condition, Dr. Nabarro said there was little or no direct evidence that the condition was really one of pyelitis, and already in 1910 Jeffreys, Thiemich, and Forbes had described suppurative lesions in the kidneys with, in some cases, a normal pelvic mucosa. More recently Chown, Wilson and Schloss, Bugbee, Helmholz, and others had emphasised the fact that the commonest lesion in the type of case under consideration has a diffuse interstitial nephritis, giving rise to suppurative foci of varying size, so that it was more correct to call the condition pyelonephritis than a simple pyelitis.

Discussing the bacteriology, Dr. Nabarro stated that *B. coli* was undoubtedly the commonest organism present in these cases, but that it might be associated with *B. proteus*, streptococcus, *B. lactis aërogenes*, and several other organisms; the multiplicity of possible germs in the urine raised a doubt whether these were the actual cause of the disease or merely secondary invaders.

Whatever might be the original cause of the infection there was no doubt some congenital abnormality was responsible for some, at least, of the cases of persistent or intermittent pyuria. Dr. M. Woolstein, in 4900 post-mortems, had found congenital anomalies of the urinary tract in 117—2·5 per cent.—and Dr. W. P. H. Sheldon, in an analysis which he had made at Dr. Nabarro's request of 400 recent autopsies at the Hospital for Sick Children, Great Ormond-street, had obtained an identical percentage (2·5) of similar congenital abnormalities. Dr. Nabarro quoted several cases, which had been under the care of colleagues at Great Ormond-street, of recurrent pyuria and bacilluria in which after cystoscopy and pyelography some obstruction to the flow of urine was suspected and after being operated upon by Mr. Oswald Addison, and an aberrant vessel ligatured, each case had apparently been cured. Another cause of obstruction to the urinary outflow was the presence of a valve in the prostatic urethra to which Young, Frontz, and Baldwin first drew particular attention in 1919, and of which anomaly Drs. Poynton and Sheldon recently reported a series of 24 cases from the Great Ormond-street Hospital. The clinical diagnoses made in some of these cases had been pyelitis, renal infantilism, and idiopathic dilatation of the ureters, and an important practical point to bear in mind was that the true state of affairs might easily be overlooked if the whole genito-urinary tract were not removed in toto and subsequently carefully dissected out.

As regards treatment he agreed in the main with Dr. Wilkinson's remarks. In the administration of hexamine some experiments of Drs. Hare, Lepper, and Martland showed that two factors were of importance: (1) the secretion of an acid urine; and (2) the relative vulnerability of the invading bacillus to formaldehyde, in which form hexamine is excreted in an acid urine. Opinions still differed widely, as they did in 1910, as to the value of vaccines in the treatment of these cases. Dr. Nabarro referred to cases in which patients had done well with vaccines after other treatment had failed. He emphasised the importance of early cystoscopic investigation in cases which failed to clear up promptly, and advised the systematic investigation of those cases by a team—a physician, surgeon, bacteriologist, biochemist, and radiologist.

DISCUSSION.

Dr. H. F. HELMHOLZ (Rochester, Minn.) said that when he injected *B. coli* into the circulation focal infections did not, as a rule, follow, as they did when staphylococci or streptococci were injected. He had found that after intracystic injections of *B. coli* (in man and in animals) the urine rapidly cleared if the bladder were normal, but not if it were diseased. Cocci were more harmful to the kidneys than were *B. coli;* thus, 90 per cent. of the coccal injections produced renal lesions, whereas only 40 per cent. of the *B. coli* injections did so, and after injections of the two (either together or *B. coli* after cocci) only cocci were found in the urine. The renal pelvis, he stated, should be examined very soon (within two to three hours) after death, otherwise the cells desquamate, which gives rise to the "milky" urine found post mortem. In his opinion pelvic, in addition to renal, lesions did occur in cases of acute pyelitis, but the lesions heal very rapidly—in animals after 30 days and in a child 11 days old he had found the lesions healing. Experimentally he had found that making the urine acid after alkaline inhibited the growth of germs, and to acidify the urine he had used ammonium chloride and ammonium nitrate till the pH was 5 to 5·5. This allowed urotropine to be given in big doses even until the bladder was irritated or until the urine was sterile. He had seen chronic cases of even two to six years' duration clear up with proper urotropine treatment in a few days; failing improvement he would get a urologist to see the case. His results with hexyl-resorcinol were disappointing. As regards ætiology, Dr. Helmholz held that coli infection was "ascending" rather than hæmatogenous, but in the newly born it was more likely the latter, though

it was rare to find *B. coli* in the blood after the first week of life. It was possible to get *B. coli* in the blood without its occurrence in the urine, and coli infections, which in his opinion were commoner in girls than in boys, were often associated with gastro-intestinal upsets.

Dr. H. BRUCE CHOWN (Winnipeg) said he would limit his remarks to pyuria, as it occurred in infancy and in children with no obvious malformation of the urinary tract, and his conclusions were (1) that the lesion was commonly a bilateral suppurative interstitial nephritis, with occasionally pyelitis and rarely cystitis; (2) pyelitis seldom, if ever, occurred alone; (3) the *B. coli* usually reached the kidneys by the blood stream, occasionally in girls by the lower urinary tract; and (4) there was frequently an associated infection elsewhere in the body, due to another organism; (5) the condition was probably more common in girls than in boys in the proportion of about three to two. He opposed Dr. Wilkinson's view—as being but opinion unsupported by concrete facts—that the milder cases of the disease were a simple pyelitis and that those which came to autopsy and upon which Wilson and Schloss, Helmholz, and Chown himself had built up their pathology of it, were of a severe and unusual type. In his (Dr. Chown's) opinion much more work would have to be done experimentally before the bacteriological problem—whether the condition was due to *B. coli* or to cocci alone, or to both acting in association—was solved, but he was bound to admit that Dr. Helmholz's experimental results pointed against the coccal septicæmic origin of *B. coli* pyuria. He agreed with Dr. Helmholz as to the frequency of coli pyuria in the new-born child associated with a blood infection, and he referred to the fact that an exact counterpart of the condition occurred in new-born calves, which had either not received colostrum or received it late.

Dr. R. R. STRUTHERS (Montreal) said in his experience the condition was very rare in boys—he had had only two cases in boys and both had congenital anomalies.

Dr. HECTOR CAMERON (London) mentioned that pus and bacilli in the urine might be associated with other conditions—e.g., meningitis, and referred to the fact that clinically the case might have recovered, whilst the bacilluria persisted for months.

The PRESIDENT said that the discussion had left unanswered several questions: (1) Was there any relation between the pyelitis of infancy and that of pregnancy? (2) Why did it occur so commonly on the right side? We had heard about ascending and descending and hæmatogenous infections; could there also be a direct "horizontal" extension from the bowel as, for example, from an infected appendix? There was also a dietetic factor which needed explanation—namely, that cutting down the milk in these cases often benefited the patient.

REPLY.

Dr. WILKINSON said he still believed the ascending type of case to be the commonest—this might be called the clinician's case; next that of hæmatogenous origin, or the pathologist's case; and thirdly the chronic, which went to the physician and surgeon.

On the final day of the Section Dr. H. C. CAMERON opened a discussion on

Disorders of Sleep.

We know little or nothing, he said, of the physiology or pathology of sleep, so the subject must be approached from the clinical standpoint. He proposed to deal briefly with four examples of such disorders: (1) sleeplessness and continuous crying in young infants; (2) sleeplessness in older children; (3) night terrors; and (4) enuresis. Three factors might be concerned in the causation of the first—namely: (*a*) pain or discomfort; (*b*) inherited or constitutional neuropathy; and (*c*) faulty management. The pains of dyspepsia, whether they be intestinal colic or ærophagy with distension of the stomach, were by far the commonest causes of sleeplessness. To prevent "wind," sleep must be secured; to secure sleep, "wind" must be prevented, and Dr. Cameron had found that a grain of chloral hydrate given ten minutes before each of five or six feeds for some days would often be successful in preventing wind. It allowed the child's suction reflex to function normally in taking the breast. Nasal obstruction from catarrh was another common cause of nervous unrest; this might be effectively relieved by allowing a few drops of 1 in 5000 adrenalin solution to flow into the nostrils before the child is put to the breast. The neuropathic infant could usually be readily detected by his thin and tense face and rigid limbs; the expression was usually anxious and the child readily cried or frowned. A much commoner cause of sleeplessness, however, was faulty management of the child on the part of the nurse or mother. Such a child would often do very well in an institution or hospital, and if it must be with its mother then probably the best place for it was up against the mother's back, where the searchlight of the mother's face and eyes could not play upon the child and her hands were free to busy themselves in occupations which diverted her thoughts from the child. Dr. Cameron believed chloral to be the most satisfactory hypnotic in infancy and together with a hot bath and envelopment in a light woollen shawl instead of in swaddling clothes the best antidotes against restlessness. Sleeplessness in older children might also be due to over-anxiety on the part of the mother or other points of management, such as inadequate ventilation, a heavy meal taken late at night, lack of exercise, or over-fatigue.

Dr. Cameron went on to consider the disorders night terrors and enuresis, and pointed out these were probably associated with metabolic processes, notably the utilisation by the body of the carbohydrate reserves, and a disturbance of metabolism resulted in a fall in the blood-sugar, ketonæmia, and increased nitrogen excretion. Individual children differed widely in their reaction to ketonæmia and to the accompanying hypoglycæmia, and the "nervous" child, with its tendency to "turns" or "attacks," accompanied by vomiting, pyrexia, irritability, anorexia, or nausea and other allied symptoms, had a low fat tolerance, and the turns or bouts which the mother described were the physical and nervous manifestations of the underlying disturbance of metabolism. He referred to recent experiments by Salomonsen upon the reaction of young children to hypoglycæmia and ketonæmia induced experimentally by starvation and by a diet containing little sugar and a high fat content. The symptoms produced in the children were similar to these enumerated above under the "nervous" child, and the author was invariably able to predict which individual children would show a strongly marked reaction. The blood-sugar was normally at a low fasting level during the night and this would explain why certain disturbances, such as asthma, enuresis, sleep-walking, and night terrors would be induced in nervous or predisposed children. Acetone could often be smelt in the breath and Salomensen had found that the early morning urine contained the highest proportion of acetone. The sleep of certain children

with hypoglycæmia and ketonæmia always tended to be abnormal—confusion, muttering, restless movements—and enuresis might be considered a specific night terror. Very often it was the child who cared most who did it. Rest, wise and understanding management, and a diet rich in sugar and low in fats were the chief needs of the nervous child. In practice night terrors were often well controlled by glucose, but Dr. Cameron was unable to speak as confidently of the control of enuresis. In some inveterate cases he believed a true hysterical paresis of the sphincter developed which perpetuated the incontinence. In boys there sometimes occurred a concomitant incontinence of fæces which was hard and scybalous and escaped slowly through a sphincter which was toneless and paretic. As in the case of the sleepless, restless infant, so in that of the bed-wetting child it might be the over-anxious or apprehensive mother who was the cause of the perpetuation of the trouble and who needed management.

DISCUSSION.

Dr. R. F. RORKE (Winnipeg) said the new-born child needed 18 to 21 hours' sleep in the day; at two years a child should sleep 14 to 16 hours out of the 24. Sleep in these children was profound, so that noise did not rouse them. Infants who lack the sucking reflex cried a good deal unless the breast were soft and the nipple long; impatient children who were unable to get much milk also cried. In both these cases sleep was disturbed, as it also was in neuropathic infants. As a rule the child improved at three months of age or at the latest six months. It was important to reassure the mother that it was not her milk which was entirely at fault and also to secure her rest at night. Sometimes an improvement might be effected by cutting down the cream and butter, also the protein, in the mother's diet. A dose of castor oil given to the child at 4 P.M. followed by boiled water for 12–18 hours might do good. For mouth-breathers a tampon with liquid paraffin so that two or three drops trickled down each nostril was often efficacious, and early removal of adenoids was advisable. Diseases such as infections, otitis media, pyelitis, might interfere with rest and lead to sleeplessness.

Dr. A. H. SPOHN (Vancouver) said that pain and inherited neuropathy were important causes of sleeplessness. He had also seen disturbed sleep follow excesses of carbohydrates and condensed milk, though it might be the result of colic in these cases. Hereditary predisposition might play a part in the production of disturbed sleep and hypoglycæmia might be an associated condition. The parents should be examined and if necessary suggestions made for a readjustment of living and for the improvement of the home life. He was interested in the hysterical feature referred to by Dr. Cameron in enuresis. In Canada the drugs used were atropine and luminal, rather than chloral hydrate, as recommended by Dr. Cameron.

Dr. ALAN G. BROWN (Toronto) referred to the relation of thymus disease to these conditions. In many children who were restless by day and poor sleepers no cause could be found except an enlarged thymus by X ray. After treatment by one or two exposures to X ray there was marked relief and the same remark applied to children in whom adenoids were suspected but not found, only a turgescence of the mucous membrane and an enlarged thymus on taking an X ray of the chest. In the case of the neuropathic infant or, as they called it in Canada, the hypertonic infant, he had found that atropine relieved restlessness and brought about sleep. He did not agree with Dr. Rorke that castor oil was good for these babies.

Dr. N. R. RAWSON (Melita) referred to the treatment of enuresis by distension of the bladder and quoted 20 cases which were said to have been benefited thereby.

REPLY.

Dr. CAMERON said he agreed with Dr. Rorke about the difficulty with sleepless infants in tenement houses, when the disturbed neighbours knocked on the wall or ceiling. This made the unhappy mother still more agitated, who in turn would pass on her agitation to the infant, so that a vicious circle was thereby set up. He thought Dr. Spohn stressed the eugenic side more than he himself would do, for "nervousness" might occur in only one child in a family, and even then it might be transitory and due to a transitory cause. Answering Dr. Brown, he said we in England did not see large thymuses so frequently as they appeared to do in Canada and that aspect in the causation of restlessness was new to him. His genito-urinary colleague at Guy's Hospital had had some success in the treatment of enuresis by bladder distension, but he (Dr. Cameron) thought the effect was largely psychological, as his colleague was a very "persuasive" man. Glucose might help in night terrors and to a less extent in enuresis; ovaltine and other similar foods might produce sleep.

Artificial Sunlight.

Dr. A. EIDINOW (London), whose paper was summarised and read by Dr. Alan Brown, gave a historical survey and review of the physiology of light therapy, with a description of the apparatus used, the indications and contra-indications for treatment. The results of light treatment, as of exposure of the body to the sun and open air, included: (1) increased warmth of the body; (2) vasodilatation and increased blood flow; (3) increased transudation of lymph; (4) increased metabolism; (5) stimulation of heat regulating mechanism; (6) analgesic and sedative effects; and (7) increasing resistance to infection. Ultra-violet radiations might be applied in one of four ways: exposure of normal skin to sources of light, exposure of ulcers or other diseased tissues to a focused beam of light, the oral administration or injection of irradiated drugs, foods, or tissue extracts, &c. The reaction of the skin depends on the following important conditions: the intensity of radiation, the character of the wave-length of rays, the time of exposure, distance from source of light, the sensitivity of the patient's skin, and the area of skin exposed. He distinguished two methods of technique in treatment—the long-ray and the short-ray therapy—the former included sunshine and skyshine as used in the treatment of surgical tuberculosis. This was the principle of the Finsen light treatment, which had been in use for over 20 years and given good results in debility and tubercle. No importance was attached to skin reactions such as erythema, but pigmentation finally developed. He described his new "daylight" lamp, so called because the rays were similar to daylight, to which patients might be exposed for hours and might even sleep under with advantage in cases of tubercle and debility. Animals exposed to the lamp have shown increased resistance to infection, and its rays have also antirachitic and bactericidal properties. Long-ray therapy was contra-indicated in acute pyrexial disease and in septicæmia or toxæmia, but during convalescence it should prove useful.

For short-ray therapy the lamps used were

tungsten arc, long-flame arc lamps containing metallic cord carbons, and quartz mercury-vapour lamps. Short rays produced rapid erythema and Dr. Eidinow gave detailed conclusions from his own observations upon the use of these rays, for he had found that the greatest errors in radiation therapy had resulted from confusion in the use of ultra-violet radiations. The technique of short-ray therapy should be strictly controlled and be done by an expert. The types of cases which responded to short-ray therapy were general debility, secondary anæmia, subacute and chronic tuberculous disease of lymphatic glands, lungs, and mucous membranes, asthma, subacute and chronic inflammatory diseases of the eyes, eczema, acne, alopecia, staphylococcal skin infections, rickets, and osteoporosis. On the other hand, rheumatic conditions, such as arthritis, fibrositis, and neuritis, responded more favourably to long-ray therapy. There were no specific laboratory methods to determine the index of reaction of the body to radiation; each case must finally be judged from the clinical evidence. Advanced heart disease, arterio-sclerosis, high fever with intoxication, nervous irritability, and impairment of the renal functions were the chief contra-indications to radiation therapy. The greatest advance in radiation therapy followed the discovery of the antirachitic properties of ultra-violet rays. These have been shown to be due to a photo-chemical reaction by which ergosterol is irradiated and transformed into vitamin D. This was absorbed by the capillaries of the skin and so distributed in the body, where it produced its beneficial effects. Similar results could be obtained by the oral administration of irradiated ergosterol. He had also concluded from his observations that ultra-violet rays absorbed by living cells produced a bactericidal effect locally at the site of irradiation, which led to an increased bactericidal power of the blood. The growth of plants depended upon the vital functions of the rays of the sun, and our existence was indirectly controlled in the same way, for there was ample evidence that these rays had great influence on our mechanism to immunity, resistance to infection, growth, and tissue metabolism.

DISCUSSION.

Dr. ALAN BROWN said there was little to criticise in Dr. Eidinow's paper, and the work which he and his colleagues had carried out in Toronto fully bore out Dr. Eidinow's conclusions except that they had very little experience of local therapy with the quartz mercury-vapour lamp, as lupus did not occur in Canada. Light therapy certainly increased the resistance to disease and Dr. Robertson had found that the resistance of irradiated rats to a particular germ was 600 times greater than that of non-irradiated rats. Dr. Brown had found that artificial light applied during November and again in February was very beneficial for the prevention of colds. Dr. Eidinow had made no reference to the effect of these rays on digestion, but, in conjunction with Dr. Price, of Calgary, he (Dr. Brown) had found that by irradiation the digestion of children was improved. Sunshine was more useful than the artificial light from lamps, but at the latitude of Toronto the invisible or chemical rays were effective only from the early part of March till early in October. Skyshine was also beneficial (about half to two-thirds as good as sunshine) for rickets could be prevented or healed by it. They had carried out many experiments in Toronto with vitamins by charging cereals with vitaman D and had had beneficial results in children and experimental animals. It required 100,000 units of vitamin D to produce an overdose, so that treatment by this vitamin could not easily be overdone.

Prof. H. B. CUSHING (Montreal) said that in Montreal and other cities in temperate climates contagious diseases, other than typhoid and dysentery, were practically non-existent during the months of May, June, and July and in his opinion the explanation was to be found in the greater amount of sunlight which prevailed during those months. This acted either by destroying the germs of these diseases or by raising the patient's resistance. We might be able ultimately to eradicate acute respiratory diseases by installing artificial sunlight lamps in our living rooms, schools, &c

Dr. NABARRO referred to observations made with milk irradiated by a simple method devised by Mr. J. O. Hickman whereby the taste of the milk was unaffected and the vitamin D content greatly increased. Such milk led to a considerably greater rate of growth in normal children than did non-irradiated milk; it often gave the necessary fillip to debilitated children who reached a certain stage of nutrition or of convalescence and then did not improve, and it also appeared to increase the resistance to catarrhal conditions, such as the common cold.

Dr. H. CHODAK GREGORY (London) said that children certainly improved under skyshine and asked if a cloudy condition of sky made any great difference in the effect produced.

Prof. W. E. DIXON (Cambridge) expressed the opinion that we might have too much light, as of most good things. People living in the tropics often avoided the light as much as possible. Many other ways of raising the resistance to disease were known; the late Dr. Washbourne showed that the injection of water into animals would do it, and Abrams's box would do the same; it was largely a psychological problem.

Dr. HUTCHISON said he came to the meeting a sceptic, but after all he had heard he was converted; he was, however, surprised that no speaker had referred to the experiments conducted by the Medical Research Council which seemed to show that children exposed to artificial sunlight were not benefited.

REPLY.

Dr. ALAN BROWN, in reply, said that the value of skyshine was one half to two-thirds that of sunshine, according to the presence or absence of clouds. Animals did well under skyshine. Pigmentation was protective but was not essential, for rickets could be cured without it. Two hours per day was the maximum duration of exposure allowable; this could be between 11 and 1, except in summer when the exposure should be in the morning between 9 and 10 and in the afternoon from 4 to 5 or 5 to 6.

BRIGHTON SANATORIUM: NEW MAIDS' HOME.—On Oct. 15th the Mayor of Brighton opened the new maids' home at this large borough institution, which has been erected at a cost of over £7000 to meet the wishes of the Health Ministry. Great difficulty had been experienced for many years in retaining maids and nurses at the sanatorium, largely owing to the absence of proper provision for their sleeping, rest, and leisure hours. Dr. Duncan Forbes, medical officer of health, explained the advantages of the new home, and the consequent rearrangement of the various wards which was now possible. He said that probably in no similar institution in England was such a variety of work undertaken. Some £70,000 had been spent upon the sanatorium since it was hurriedly conceived and started with a few wooden buildings in 1881.

MEDICAL SOCIETIES

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION.

AT a meeting of this Association, held on Oct. 21st, Dr. LETITIA FAIRFIELD gave her presidential address on

The Effects in Medical Practice of the Local Government Act, 1929.

She pointed out that the present organisation of the Public Health Services can be traced back to very varied sources, and these remote origins still determine their composition. First came the poor-law, which, although instituted in 1601 with the express duty of caring for the destitute sick as part of its function, had made no suitable hospital provision of any kind when the Guardians of the Poor took over its administration in 1830. The very fine, if unequal, service handed over to the Public Health authorities on April 1st, 1930, was thus entirely the work of the last 96 years. The Public Health Service proper was much younger as it derived from the General Board of Health, founded in 1848. So great was then the fear of bureaucracy and centralised control that for 25 years the Board was not allowed jurisdiction of any kind in an area unless the death-rate was over 23 per 1000. Dr. Fairfield said that the success of the operations of the Board in protecting the public against local vested interests was probably the secret of its rapid growth as compared with other authorities. Modern discoveries in medicine extending the range of knowledge of infectious disease, the new conceptions of preventive medicine, which gave birth to the school medical service, and the maternity and child welfare movement, all contributed to extend the domain of the medical officer of health. When the chaos of administrative effort had become impossible to overlook, and the shortcomings of the guardians, as a body, for administering treatment were likewise the subject of comment by a Royal Commission, it was, naturally, the medical officer of health who was entrusted with the organisation of a united service which would place the full resources of medical science at the disposal of the people of the country.

Dr. Fairfield drew attention to the fact that the poor-law had not been and could not be abolished, for it conferred important rights as well as imposed restrictions. The poor-law stood between the poor man and death from starvation and neglect in illness; it gave him a statutory claim on the pockets of his fellow-citizens, and this obligation could not be handed over to the caprices of charity or the vagaries of municipal policy—which might give much more, but might give nothing at all. If and when the transferred infirmaries were administered under the Public Health Act, the obligation to treat every destitute applicant would remain. In London the Public Health Committee took over from the old Boards of Guardians 29 infirmaries, comprising 16,500 beds, and 14 allied institutions with 11,500 beds in addition to 34 special hospitals (fevers and children's, &c.) totalling 15,000 beds. The L.C.C. was now, moreover, responsible for domiciliary treatment of the sick poor and for medical care of the chronic sick, the aged and infirm, and of over 8000 children in the former poor-law schools. The staffing of the transferred hospitals was giving rise to much controversy throughout the country, and experiments in several methods would probably be worked out. Some authorities might prefer to develop on the lines of a whole-time service as in the R.A.M.C., with room for specialisation and research, others would follow the model of the voluntary hospitals and rely on visiting consultants, while in rural areas it was suggested that general practitioners might have a considerable share in the work. The improvement of domiciliary medical treatment was also admitted to be of great importance. Dr. Fairfield pointed out that not all the sick poor needed to be treated in hospital, and institutional treatment of an adequate kind was now so costly that in her view no beds should be occupied if the patients could be dealt with in their own homes.

SHEFFIELD MEDICO-CHIRURGICAL SOCIETY.

AT a meeting of this Society on Oct. 22nd, with Prof. GRAHAM SIMPSON, the President, in the chair, Mr. A. S. PARKES, D.Sc., Beit Memorial Research Fellow at University College, London, read a paper on the

Regulation of the Ovarian Cycle.

Various lines of work, he said, all tended to show that the activity of the ovary was regulated from some external source. It was found many years ago that the ovary of an immature animal grafted into an oöphorectomised adult female immediately underwent development and began its morphological and endocrine cycle long before it would have done so in its original environment. This and similar observations demonstrated quite clearly that the functional age of the ovary was regulated by that of the soma. It was now well known that the number of follicles ovulating at a time was governed, not by the amount of ovarian tissue present, but by the amount available of some substance in the circulating blood. Periodic action of the œstrus-producing hormone could also be demonstrated after complete elimination of the cyclic structures of the ovary by exposure to X rays. The periodic mechanism, whatever it might be, was thus probably located elsewhere than in the ovary.

Experimental work during the last few years had revealed an amazing mechanism whereby substances elaborated by the anterior lobe of the pituitary body activated the ovary. One of the anterior lobe substances was concerned in the maturation of the Graafian follicle and ovulation, while another was responsible for causing the formation of the corpus luteum from the shell of the ruptured follicle. The "luteinising" substance administered to an animal with a quiescent ovary caused the follicular granulosa to undergo luteinisation without the intermediate act of ovulation. The other substance caused the quiescent ovary to enter upon a phase of follicular maturation culminating in ovulation and the formation of the corpora lutea. In each case changes were observed in the accessory organs corresponding to the phase induced in the ovary and resulting from the stimulation of ovarian endocrine activity. The action of the substances was exerted solely on the ovary and thence on the accessory organs. Anterior lobe preparations had no effect in animals whose ovaries had been removed.

The discovery of the anterior pituitary substance had explained the nature of the stimuli responsible for evoking the different phases of ovarian morphological and endocrine activity, but little progress had been made in elucidating the means whereby the periodic activity of the anterior lobe hormones was organised. Presumably some kind of endocrine cycle existed in the anterior lobe, but attempts to obtain histological evidence of this had so far been abortive. In any case, whatever the cycle mechanism in the anterior lobe might be, it was necessary to suppose that it could be modified by such events in the accessory organs as pregnancy, during which prolonged luteal activity was found.

REVIEWS AND NOTICES OF BOOKS

Insomnia.

By H. CRICHTON-MILLER, M.A., M.D., Hon. Director, Tavistock-square Clinic. London: Edward Arnold and Co. 1930. Pp. 172. 10*s.* 6*d.*

OF recent years modern psychology and psychotherapy have made valuable contributions to the ætiology and treatment of sleeplessness. Nevertheless, we are still far from having reached a complete explanation of the physiology of sleep and a satisfactory solution of the problems of insomnia. This volume, described as "an outline for the practitioner" makes no claim to be an exhaustive study of the subject of sleep and its disorders, but rather to present to the busy practitioner some of the more important aspects of insomnia and thus to introduce him to the wider problem of the psychoneuroses. The more general considerations are dealt with in the first section of the book; the various definitions of sleep are mentioned and its nature and mechanism are briefly discussed. The factor of emotional conflict is rightly emphasised and various conclusions are reached, as, for instance, that "insomnia is a failure to achieve a normal degree of that state of minimal activity of mind and body which we call sleep"; that it consists in an interruption of the mechanism, as yet unfathomed, which regulates dissociation; and that sleeplessness is a manifestation of "insecurity."

The chapter dealing with treatment contains much sound and practical advice. The author points out the fact, which is only too true, that the usual therapeutic attitude to insomnia is an endeavour to induce sleep by alterations of environment rather than to treat the insomnia; that is, by attempting to adjust surroundings to the patient instead of trying to educate the patient up to his environment. Massage, muscular relaxation, the elimination of toxic factors, digestive disturbance, occupation, and especially the patient's attitude to his symptom, all have their place in treatment. We ourselves know of no way to diagnose "adrenal instability."

The various theories concerning the mechanism of sleep, which are numerous and often contradictory, do not all deserve the space allotted to them. Pavlov regards internal inhibition and sleep as one and the same thing and his work on condition reflexes is well summarised. From the psychological aspect, dissociation, dreams, and hypnosis are discussed in their relation to sleep and the views of different psychological schools, notably those of Freud and Jung, are reviewed with regard to the psychoneuroses. The form of psychotherapy which, in the author's experience, appears to have given the most favourable results, is one which might be termed "psychological exploration" rather than analysis. Hypnosis is also advocated for certain cases and especially for those not sufficiently intelligent to coöperate in other forms of psychotherapy. In a section dealing with the medicinal treatment of insomnia the author shows a preference for luminal given two hours before sleep is required, with Liq. Brom. Chlor. Co. (B.P.C.) taken at bedtime, the dose of each preparation varying with the severity of the case. The book closes with a chapter containing descriptions of nine illustrative cases, the patients having complained of insomnia with or without other features. These cases are not complete clinical pictures but are intended to serve merely as typical problems in diagnosis and treatment.

The style of presentation is occasionally involved. The work, however, is to be cordially recommended for the purpose for which it is intended—as an outline for the practitioner. It also serves as an admirable introduction and up-to-date review of a difficult subject. There is an excellent bibliography.

Modern Otology.

By JOSEPH CLARENCE KEELER, M.D., F.A.C.S., Associate Professor of Otology, Jefferson Medical College. Philadelphia: F. A. Davis Company. 1930. Pp. 858. $10.

THIS large text-book on otology reflects the extensive experience of its author, but is incomplete in certain respects, and in others not very well arranged. For example, the subject of vestibular tests is discussed early in the book under physiology, and again at greater length in a later chapter on diseases of the internal ear. This makes for redundancy, and in neither place is the practical application of this intricate matter so set out as to enable the practitioner to carry out, and to make proper deductions from, these tests; and an important mistake is made when it is stated that douching the right ear with cold water produces nystagmus to the right side. Although no direct treatment is of avail in otosclerosis, attention to concurrent anæmia or endocrine disturbance is of some value, and there are combined cases in which the local treatment of catarrhal conditions are helpful; these matters might usefully have been discussed. Again, in the section on aural furunculosis, general treatment receives no mention.

For the rest, Prof. Keeler's views, founded on his personal experience, will be read with interest. In acute otitis he favours routine syringing after paracentesis; in his opinion spontaneous perforation of the drum is usually of insufficient size, frequently heals prematurely while the ear is still suppurating, and should usually be enlarged. In dealing with the indications for operation in acute mastoiditis, he states that operation should be performed without delay whenever tenderness can be easily elicited; this dictum takes no account of the stage of the disease when the symptom occurs, and is contrary to the general opinion that mastoid tenderness is very common in the early days of any acute otitis. In the performance of the mastoid operation he considers exposure of the dura mater in the middle fossa a very serious accident. He recommends ligation of the jugular vein before any intervention on the lateral sinus. After antrotomy, or the Schwartz operation for acute mastoiditis, the wound is packed

until the cavity is completely closed, the time required being eight to ten weeks. This operation is described in the chapter on chronic mastoiditis, and the indications for the two types of operation are not very clearly given.

This work well illustrates the difficulty of compiling well-balanced text-books. The author states in the preface that he undertook the task of its preparation because he had always felt existing text-books to be unsatisfactory; but in spite of his obvious sincerity of outlook, his attempt to improve over many predecessors is not really successful.

Treatise on Materia Medica and Therapeutics.

By the late RAKHALDAS GHOSH. Twelfth edition. By BIRENDRA NATH GHOSH, F.R.F.P. & S. Glasg., Examiner in Pharmacology, University of Calcutta and State Medical Faculty of Bengal. Calcutta: Hilton and Co. London: H. K. Lewis and Co., Ltd. 1930. Pp. 763. 12*s.* 6*d.*

THIS work has been thoroughly revised in the light of recent investigations, a good many of the less important drugs have been deleted, and a number which are popular at the moment, such as sanocrysin, novasurol, tryparsamide, and ephedrine have been introduced. We have here a clear account of present-day knowledge of materia medica and therapeutics, and the work should continue to merit the great popularity it enjoys among Indian students of medicine.

Surgical Diseases of the Thyroid Gland.

By E. M. ROBERTS, M.D., Associate Professor of Surgery, McGill University; R. R. FITZGERALD, M.D.; and P. G. SILVER, M.D. Philadelphia: Lea and Febiger. Pp. 238. $3.50.

THIS book in small compass presents the surgical aspect of the goitre question succinctly, accurately, and in an attractive and readable fashion. The account is founded upon the study of 700 patients who have passed through the goitre department of the Montreal General Hospital. The care with which the work has been carried out is obvious and lends weight to the authors' statements and opinions. We would select for special mention the sections on exophthalmic goitre and the discussion on the ætiology of thyroid enlargements. The book is very well written (except that occasionally the author uses a clumsy adjective such as "goitrigenous"), and well printed and illustrated. It should be read by all surgeons interested in goitre.

Recent Advances in Analytical Chemistry.

Vol. I.: *Organic.* Edited by C. AINSWORTH MITCHELL, M.A., D.Sc., F.I.C. London: J. and A. Churchill. 1930. Pp. 421. 12*s.* 6*d.*

THE biological worker is often forced to waste time in searching the literature for methods of analysis suitable to a given problem; not only are many of the most significant advances published in industrial journals which are not readily accessible to him, but also he is often quite unable to assess the true value of the various contributions to the mass of new methods and improvements published every year. This critical summary of the advance in analytical methods during the last ten years will give him much help. Each chapter deals with the special analyses demanded in the various industries, such as sugar, oils and fats, milk and milk products, gas analysis; and each chapter is written by an authority whose work fits him peculiarly for the task. Among these specialised analyses the research worker will find hints which will enable him to devise methods for his own problems. Dr. Dorothy Jordan Lloyd contributes a chapter on the analysis and determination of the constitution of the proteins. The inclusion of descriptions of physico-chemical determinations, of methods of biological assay, of the use of enzymes as an aid to analysis and of physiological methods is unusual in a book on chemical analysis and will give great satisfaction. It is to be regretted that the authors do not set out the results of their own experience to a greater extent, for practical hints in technique are more needed in analysis than in any other branch of chemistry.

In addition to the large number of references, an adequate bibliography is supplied at the end of each chapter. The publication of the second (inorganic) volume will be eagerly awaited.

Cosmetic Treatment of Skin Complaints.

By Prof. E. KROMAYER, Berlin. London: Humphrey Milford, Oxford University Press. 1930. Pp. 110. 6*s.* 6*d.*

THE German original of this translation was recently reviewed in this journal, and the comments there expressed may be taken to apply to the English version. The translator's identity is not revealed, but the work has been well done. The illustrations are identical with those of the second German edition (1929). Prof. Kromayer, whose fame in the realm of actinotherapy will rank next with that of Finsen, is admirably qualified for the task he undertakes in this small manual. His recommendations, although they may not entirely commend themselves to those with strictly dermatological experience, are deserving of the most careful consideration. This applies in particular to the specialised procedures with rotary instruments—the burr or rasp, and the cylindrical knife. Without a practical demonstration of the method or its results an exact opinion is not possible. The principle involved is simple, and aims at removing stigmata of all kinds from the epidermis, with a minimum of damage to the underlying cutis, injury to which inevitably leads to scarring. Among common conditions in which the author recommends the procedure are boils (cylindrical knife or punch), comedones (rasp or drill), acne abscesses (punch), megaloporia (rasp), and freckles (rasp). The removal of so delicate a lesion as a freckle with such an instrument as a rasp would seem to require a delicacy of touch given to few. It must be remembered, however, that the pigment-forming cells are situated in the basal cell layer of the Malpighian rete, where caustics, if they penetrate at all, might destroy too much and give rise to hypertrophic scars. It is satisfactory to note that the X ray treatment of hypertrichosis is condemned, although it is difficult to see, without a practical demonstration, how the method of cutting out hairs with a cylindrical punch, 8 mm. in diameter, can be superior under any circumstances to electrolysis. The prescriptions are all simple and based on classical formulæ, but the most valuable sections of the book are those dealing with the indications and technique of the famous Kromayer lamp, which since its introduction over 30 years ago has not been excelled in its special dermatological field, and has undergone but few mechanical modifications.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 8, 1930.

THE POSITION OF NURSING.

A LETTER by Dr. E. CARLING, published in these columns on Oct. 11th, set out the difficulties of recruiting for the calling of nursing, emphasising the fact that nursing does not any longer attract enough young women having the proper educational standard. There is a twofold position to consider—first, the enlisting of probationers, and, secondly, the conditions of service offered to trained nurses; and we felt that THE LANCET would be discharging an appropriate duty by arranging for a Commission of Inquiry that would assist in the devising of practical remedies for conditions which affect the sick throughout the country. The composition of that Commission is nearly complete. It will consist of members of the medical and nursing professions, and of persons in a position to know the educational and economic issues involved. The names of the Commission will be published shortly. While delegates from official bodies have not been invited to join the Commission, that body will count upon their sympathetic coöperation.

THE PUBLIC HEALTH.

EARLY this week Sir GEORGE NEWMAN issued his survey[1] of the public health during 1929. The report, as he is careful to point out, is not a scientific text-book. Avoiding technicalities and details of research it presents the established elements of knowledge essential to the guidance of the authorities in their business of providing for the health of the people in their charge. The medical department of the Ministry of Health over which Sir GEORGE NEWMAN presides is itself a complex organism. Separate departments deal specially with (1) infectious disease; (2) maternal and child welfare; (3) tuberculosis and venereal disease; (4) food and drugs; (5) general practitioner services; and the activities of the whole may be compared to those of a five-rayed asterid, each arm of which is activated by numberless podia, and with a single coördinating madreporite situated near the middle of the central body. The population surveyed comprises nearly 45 million persons among whom, owing to declining birth- and death-rates, the proportion of children is decreasing and the proportion of persons past the prime of life increasing, with the result that the average age of the population is steadily rising and medical interest centres more and more on middle age. The principal causes of death occur in the same order of precedence as last year, with certain minor variations. Among every thousand recorded deaths 225 are due to diseases of heart and circulation, 157 to bronchitis, pneumonia, and other respiratory diseases, 107 to cancer and other malignant disease, 82 to diseases of the nervous system, and 71 to tuberculosis in its varying forms. The corresponding figure for influenza is 55, for the outbreak in the early part of the year was the most severe from which the country has suffered since 1918. Tuberculosis, nervous diseases, malignant diseases, and premature birth all show a proportionate decline in death certification, while respiratory diseases, including bronchitis and pneumonia, have increased as a result of complications of this kind which accompany influenza. Sir GEORGE regards it as both encouraging and gratifying to find so relatively sound a condition of health among the English people at the present time. It is, of course, not possible to estimate the incidence of sickness which is not fatal, but there is no reason to doubt the general lessons of a sample table given in last year's report showing that among a thousand insured persons in receipt of medical benefit, 208 were suffering from respiratory disease, followed in diminishing frequency by abnormalities and irregularities of the digestive system (122), rheumatic disorders (82), debility, neuralgia, and headache (81), abscesses and septic conditions (74), with diseases of the nervous system following some way behind. Such a category is clearly of the roughest sort. What conditions can be classified with exactness as rheumatic must vary with the meaning that is attributed to the term rheumatic, while debility and neuralgia in association with headache form a still vaguer picture. But any closer classification would substitute error for uncertainty.

During the year no important epidemic of disease, other than influenza, occurred to upset the normal routine of health administration. The incidence and mortality of enteric fever again decreased, while those of scarlet fever increased somewhat; it is satisfactory to note that the incidence and mortality of encephalitis lethargica, which in the past have closely followed those of influenza, have not done so this year. The absence of disturbing elements has made it easier to observe the slow quiet progress in dealing with some disorders of childhood which have almost come to be accepted as untouchable by medical endeavour. During the year measles accounted for 3388 deaths, the greatest number from any of the infectious diseases of childhood, but for the first time local authorities are beginning to use the serum of convalescents to protect children who have been exposed to infection. The method is almost contemptible in its simplicity, and on page 83 are printed, side by side, two little cautionary stories of the medical officer who did and the one who didn't. A single adult, it seems, may provide as many as 20–50 protective doses, and it is not even necessary to go outside the ranks

[1] On the State of the Public Health. Annual Report of the Chief Medical Officer to the Ministry of Health for the Year 1929. H.M. Stationery Office. Pp. 240. 3*s*. 6*d*.

of the health department to obtain the material for immunisation. In other infections the immunising principle is also gaining ground. Children are being protected against diphtheria in clinics and at school by 37 authorities who have obtained the necessary sanction; the cost of immunising a batch of 150 children may be less than that of treating a single case of established disease. In one district the showing of a persuasive film made it necessary to open five clinics a week instead of one. In scarlet fever antitoxin treatment is justified even in mild cases by the more rapid recovery of the patient and the lessened tendency to complications. Similar methods are being tried for infectious diseases of the nervous system whose record of mortality is still of the same order of importance as the numerically more impressive zymotic diseases. While poliomyelitis has increased a little and encephalitis lethargica has declined, our ignorance of the epidemiology of these two diseases is frankly admitted.

The event of the year in public health administration has, of course, been the passing of the Local Government Act and the changes consequent thereupon. Unfortunately, it is difficult for anyone unacquainted with official modes of speech to visualise what exactly is happening even in the lucid pages of this report. It is noted that 16 out of 62 county councils and 49 out of 83 county borough councils have formally abrogated their powers of dealing under the Poor-law Act with some of their medical services, which will henceforth be performed exclusively under health committees. There are other ways in which health services can be unified under the new legislation. For instance, 7 county and 21 county borough councils have assigned to some particular committee, other than the public assistance committee, the domiciliary relief of expectant and nursing mothers; 7 and 11 respectively have done the same in regard to mentally defective persons. Outdoor medical relief has been assigned to the health committee by 7 councils and the maintenance of poor children to the education committee by 31 other bodies. Apart from such formal transference, the gradual absorption of poor-law medical functions will be largely aided by means of the normal administrative machinery of the local authority. There is an interesting passage in this section of the report dealing with the sick-wards of the late poor-law hospitals and institutions. Some of those responsible for the care of the bedrid infirm have advanced reasons why it is preferable for many persons now being maintained in the hospital to be cared for in appropriate wards in the "house." The care and attendance they require is there given more consistently by women skilled in this work than by rapidly changing groups of probationers in training, even under the direction of a nursing sister, while the routine of these wards can be better adjusted to secure a homely atmosphere of comfort for the old people. Should they develop acute illness or be recognised as in need of treatment they can be quickly transferred to an acute hospital ward. This is an interesting point of view.

In his concluding paragraph Sir GEORGE has a kind word to say for the newspaper press as the most effective means of educating people on the importance of health, if only when acting as interpreters their interpretation is true and educative rather than propagandist.

TRANSMISSION OF MENTAL DEFECT.

THE statement that 80 per cent. of mental deficiency is hereditary is often taken to mean that the majority of certifiably mentally defective children are offspring of certifiably mentally defective parents, or at least that many defective members will be found in their families. In fact, this estimate includes many cases in which a familial psychopathic strain is deduced from abnormalities among collaterals such as uncles and aunts. The question of direct transmission has been the subject of a small investigation by Dr. A. C. WILLIAMS, and his results are given in the annual report of the School Medical Officer for London. On the statements of teachers, social workers, and the like, he classifies the parents of 100 children admitted to special mental defective (M.D.) schools into five groups: (1) superior, (2) average, (3) inferior, (4) unstable, and (5) mentally defective. By "superior" he seems merely to mean above the average for the district, and he uses similar criteria for "average" and "inferior." "Unstable" covers the criminal and alcoholic, while "mentally defective" includes only those who have been at some time certified or have been pupils of an M.D. school. The M.D. school examinations in London have been going on for so many years that most of the mentally defective under middle age would be caught in this sieve, though not quite all. The status of the parents he gives as follows: superior, 15; average, 45; inferior, 28; unstable, 8; and M.D., 4. The high figure for the "superior" group is somewhat surprising, and the percentage of parents proved to be mentally defective is small, especially as the cases included all those where either father or mother was mentally defective. But since many (perhaps half) of the parents would have missed the school "sieve" because of their age, or for other reasons, it is likely that the figure 4 would be increased considerably, perhaps nearly doubled, in an ideally complete investigation. While the inferior and unstable parents are together given a total of 36 per cent., it is added that "some may have been classed as 'average' owing to paucity of information, and it is probable that this figure should be raised to nearly 50." The modifications in these figures detract from their value, but their significance is increased by the results which Dr. WILLIAMS obtained from an independent group of 66 families of which the headmistress of an M.D. school had accurate knowledge. These figures tallied remarkably closely with those given above, the mentally defective parents being 5 per cent. and the inferior and unstable 32 per cent. Further-

more, the results are curiously in harmony with those of an inquiry by the Birmingham After-Care Committee, which noted the mental condition of 276 children, all of whom had a parent who had attended a special M.D. school. Of these children, 250 were attending ordinary schools, 12 were at work (one being M.D.), 8 were physically defective, and 6 were M.D. Thus, in all, there were 7 cases of mental deficiency, or rather less than 3 per cent. All these children were over 5, but many of them were under 7, and so would have missed examination—that is to say, the true percentage was higher, perhaps 5 or 6 per cent.

For a study of this kind the ideal would be to have direct mental examination of large numbers of children, of their parents, and their grandparents. This is, of course, impossible, and all that can be said at present is that the proportion of direct transmission from certifiable parent to certifiable child is very small, probably between 5 and 10 per cent., the majority of defectives being the offspring of persons not themselves certifiable but of inferior or unstable mentally. Dr. A. F. TREDGOLD says that his observations show that "in relation to the total number of defectives, the proportion of those who are the offspring of a certifiably defective parent or parents is extremely small."[1] Dr. WILLIAMS also classified the status of the parents of a small group of imbeciles, and the results showed the feature noted by Dr. E. O. LEWIS, that defectives of the lowest grade are often the children of persons of normal or even superior intellectual capacity. This phenomenon may be at least partly accounted for by the fact that many of these children are cases of secondary amentia (if mongols are included under that heading).

In the same report is given Dr. F. C. SHRUBSALL'S analysis of the records of 1360 cases dealt with under the Mental Deficiency Act, in which detailed inquiries were made into the family. In this important series it was found that in 9·5 per cent. one or more of the brothers and sisters were also mentally defective (though in nearly 1 per cent. a sibling had won a scholarship) and it was remarkable that the frequency varied inversely with the grade of defect; that is, the feeble-minded had defective siblings in 11·6 per cent., imbeciles in 5·7 per cent., and idiots in only 4·3 per cent. Dr. SHRUBSALL remarks that "in all but seven of the instances in which more members than one of the sibship were mentally defective, the type of defect found was simple primary amentia, often of the sub-cultural variety," and the greater proportion of defective siblings in this type and the highest grade was illustrated by an earlier analysis (in 1912) by Dr. SHRUBSALL of the records of 2000 ex-pupils of M.D. schools—that is, educable mentally defectives—for here the figures were 13 per cent. The much smaller influence of heredity in low-grade cases is also noted in Dr. LEWIS'S investigation for the Joint Committee, but the terms of reference did not include transmission in general. It seems highly desirable that an authoritative inquiry should be held into the causation and prevention of mental defect—a recommendation already made by the medical committee of the Central Association for Mental Welfare.

[1] Mental Welfare, Jan. 15th, 1930, p. 10.

A NATIVE MEDICAL SERVICE FOR SOUTH AFRICA.

IN the report of the Hospital Survey Committee of South Africa, in 1927, it was pointed out that there was approximately only one hospital bed for every 2231 non-Europeans in the Union, and that medical and nursing services were not available for natives living under tribal conditions, except at a few centres. It is not surprising that the witch doctor flourishes among the tribes, and that in Natal native herbalists are licensed by the State at £3 per head per annum. The Committee recommended the establishment of a Government medical service consisting of whole-time medical practitioners, nurses, and health assistants. It is suggested that the health assistants shall be natives who have reached a definite standard of proficiency in male nursing, the recognition of infectious disease, deverminisation of huts, clothes, and persons, and the systematic treatment of malaria and venereal disease; it is not intended, however, that they should undertake anything in the nature of medical practice. The Committee further proposed that the scheme should be run in connexion with Government or mission hospitals wherever possible, to avoid the expense of building new quarters, but the cost would in any case be high. Ultimately, it is intended that medical service shall be supplied by native practitioners, who will not only be more acceptable to the patients, but who can be engaged at salaries lower than those likely to attract Europeans. Unfortunately, there are not yet a sufficient number of native practitioners available, and it is contemplated that inducements might be offered to natives to qualify as medical men, such inducements to take the form of loans and bursaries. Additional expenditure on buildings for training and for hostels would increase the initial cost considerably. Experience, however, in other parts of Africa suggests that the native practitioner, when qualified, is not often content to practise in his home surroundings.

There are several objections to the scheme, other than the financial aspect, which have been stressed[1] by Sir EDWARD THORNTON on behalf of the Union Public Health Department. If put into practice, he writes, the scheme would inevitably affect the livelihood of European practitioners at present working among natives; it is even probable that certain sections of the European population would desert their own doctor for one whom they fancied combined a knowledge of medicine with the art of witchcraft. Nor is it very likely that native practitioners will be content to practise in the bush when it lay in their power to migrate to the towns. Col. THORNTON has an alternative suggestion, which, although he admits it to be less sympathetic to native aspirations than that proposed by the Committee,

[1] Journal of the Medical Association of South Africa, Sept. 13th, p. 507.

would go a long way towards meeting the urgent needs of the native population, or so he believes. He proposes that the European district surgeon should be made the head of the organisation in his area, and should be responsible for supervision of the health centres. Male natives should be trained as health assistants, and females as nursing aids, to carry on their work under the direction of the district surgeon. The ultimate aim would be the revocation of licences issued to untrained native practitioners, and the abolition of practice by native medicine men. A certain amount of license would have to be allowed, Col. THORNTON considers, to these partially trained assistants in prescribing for minor ailments. The dangers of such a course are obvious. A highly trained European nursing sister is liable to fall into errors of diagnosis through lack of medical knowledge, and it is doubtful if a faulty service is much better than no service. The Trained Nurses' Association, however, has expressed readiness to welcome a lower grade of women to be known as nursing aids, who shall undertake nursing assistance in rural areas. It is suggested that a training school should be opened at Durban, preferably under missionary auspices; Col. THORNTON estimates that if the American Board of Missions undertook the control of the scheme, the cost to the State would be not more than £10,000 yearly, provided that fees were paid by the patients wherever possible, and that bursaries were made available from the Native Development Fund. Health centres, he considers, should be established by preference in areas where natives undertake to build and keep in repair the necessary huts—the cost of equipment and staff falling on the Government. The advantages of this scheme lie in the comparatively small cost, and the speed with which nursing, medical, and midwifery aid could be brought to the native population in outlying districts.

ANNOTATIONS

OCCUPATIONAL THERAPY FOR PHYSICAL DISEASE.

MUCH has been heard lately about the importance of occupational therapy for mental disease, but less is written in this country about its value in all kinds of illness and convalescence. As applied in most institutions at present it is still in the somewhat amateur form that characterised occupational therapy in mental hospitals 20 years ago. Wise nurses give their patients little tasks to perform, and convalescent homes and like institutions provide unexacting games and sports. At the Toronto General Hospital occupational therapy has become a very important routine feature. The regular staff of the hospital includes assistants known as "aides" who have had a special two years' course in their subject, including instruction in anatomy, physiology, hygiene, psychology, and all kinds of handicrafts and remedial exercises. These aides work in close coöperation with the doctors, both in the wards and in the workshops. The hospital provides the materials and takes any profits from sales of finished goods. On the whole it is found better not to allow the patients any percentage of profits, as this makes them want to work at the more paying handicrafts instead of those peculiarly suited to their illness. For patients who do not need hospital care the work has been organised by the Ontario Society of Occupational Therapy, which obtained a charter in 1920. This society maintains a workshop where patients work under a doctor's prescription. Here the cardiac, arthritic, or nervous patient can be useful, self-respecting, and wholly or partly self-supporting, and patients with special disabilities can be set to do interesting work which will exercise just those particular muscles which need to be brought into play. For example, a marked improvement was obtained in an arthritic hand by making flowers out of beads and wire; a man with a badly injured wrist gradually restored it by working a shuttle on a weaving loom, and the value to the restless or depressed patient of regular constructive work needs no emphasis.

Three important results were obtained in London from an experiment of this kind at the Royal Free Hospital. The first was the mental benefit, which, of course, was anticipated. The second was the physical benefit; it was found that return to work was accelerated far more effectively by occupational therapy than by any kind of physiotherapeutic treatment. A man with a stiff elbow would be set to sawing and planing under a skilled carpenter; or a man with a dislocated shoulder would be set to sand-papering bed-table surfaces, raised each day a little higher until he was working above his head. The third value of the work, which was quite unexpected, was the remarkably effective test it provided for the malingerer or case with psychological retardation of recovery. The man who was genuinely keen to get back to work welcomed the occupational clinic with enthusiasm and reported his daily progress with pride. The man who did not want to return to work grumbled at the clinic and said it did him no good, but generally returned to his job quicker than he would otherwise have done, since he found his treatment "too much like work." Occupational therapy has therefore not only the obvious merit of leading a man gently across the bridge from complete idleness to full work, but might also prove a considerable economy to the country in sickness benefit. As a commercial proposition the work needs subsidising, for there is undoubtedly a difficulty in selling the goods made under these circumstances. Here a well-organised voluntary society, like the Toronto one, could be a great help, but apart from voluntary aid insurance companies might well find expenditure of this kind an economy.

There is at the present time some difficulty in obtaining assistants trained in occupational therapy. It is a branch of physiotherapeutic work which demands considerable ability and intelligence and should make a special appeal to educated women. There is an excellent opening for a physiotherapist who will start a centre for private patients. A room divided into 10 or 12 cubicles would serve a great number of patients coming by appointment for a certain number of hours a week, according to their doctor's prescription, to work at the loom, the carpenter's bench, the jigsaw-puzzle bench, the potter's wheel, or any of the various kinds of handicraft. It is however, of the utmost importance that the work should be directed by the medical man and that the profession generally should take a discriminating interest in the anatomical and physiological principle

nderlying the restoration of function, and in the articular variety of work or play best suited to bring bout the desired result.

PERFORATED PEPTIC ULCERS.

In a paper on Acute Free Perforation of Gastric nd Duodenal Ulcers Dr. C. Semb [1] gives figures uggesting that the behaviour of the perforated astric and duodenal ulcer has changed in some espects even in the course of a generation. His naterial consists of 166 cases treated at the Ullevaal Hospital, in Oslo, between 1912 and 1929. The lcers were duodenal in 36·5 per cent. and gastric n 63·5 per cent. Women were represented only by 31 cases, the proportion of men to women being, ccordingly, 4 to 1. Brunner's important statistical vork, published in 1903, showed a very different atio, only one-third of the patients being males. n 1911, Petrén showed that the sexes were about qually represented, and this finding was confirmed n 1915 by Shoemaker. Subsequent statistics have hown a steady fall in the relative incidence of erforating ulcers in women. The relative and bsolute increase in the number of cases in men has een attributed by the Swede, Bager, to the increased onsumption of cigarettes by young men, while German authors have connected it with an alteration n the diet since the war, notably an increased onsumption of meat. The age-curves of Semb's ases showed marked sex differences; whilst in women his condition was fairly evenly distributed in the arious age-groups, with only a slight preponderance etween the ages of 20 and 50, the men showed an ccumulation of cases between the ages of 20 and 29 nd, to a less extent, between 30 and 39. While he incidence of the acute perforating ulcer in women oes not seem to have changed in the period under eview, it has increased greatly in the case of men. he 26 deaths (total mortality of 15·7 per cent.) were istributed in such a way as to show how important re two factors—namely, the patient's age and the ength of the interval between perforation and operaion. The mortality rose from 5 per cent. between he ages of 20 and 30 to 14 per cent. between 30 and 0, reaching 40 per cent. in the case of patients over he age of 70. The position also of the perforating lcer seemed to influence the mortality, and the uxta-pyloric ulcer, with only 13 deaths among 127 ases (10·2 per cent.), showed the lowest mortality. hile the mortality was 25·8 per cent. for the women was only 12·7 per cent. for the men. As for the ngth of the interval between perforation and operaon, none of the 48 patients coming to hospital within x hours of perforation developed peritonitis, and he single death in this group was due to pneumonia. ine of the 112 patients treated within 12 hours of dmission died; and this mortality of 8 per cent. se to 18·4 per cent. in the case of the 38 patients perated on from 12 to 24 hours after perforation. he of the most encouraging features of this investigaon was the high proportion of complete recoveries bserved more than a year after the operation. was found that 75 per cent. had got rid completely their pre-perforation dyspepsia, and could tolerate kinds of food. Further, improvement was effected 19·4 per cent., the patients still being liable to ght dyspepsia or intestinal symptoms, but not being eatly troubled by them, and recovering when etetic precautions were taken for a time. So it was only in 5·6 per cent. that no cure could be claimed. The treatment in the overwhelming majority of cases consisted of suture with gastro-enterostomy and flushing out of the peritoneal cavity through a criss-cross incision in the right iliac fossa. With such good results from simple suture and gastro-enterostomy, Semb is not inclined to recommend the comparatively severe operation of resection except for such special indications as a bleeding ulcer or a suspicion of cancer.

[1] Acta Chir. Scand., Sept. 1st, 1930.

MOVEMENTS OF THE EYES IN READING.

It was thought at one time that in reading the eyes move backwards and forwards smoothly and continuously and perception of the words takes place during the movement. But so long ago as 1878, as is pointed out by Miss M. D. Vernon,[1] Javal observed that this is not so. As the result of his observations and those of several more recent writers, it is now known that during reading the eyes move with a series of rapid jerks, with a pause after each movement during which the eyes are relatively at rest. On reaching the end of a line the eyes move smoothly to the left to the beginning of the next line. Only during the pauses which occur while the eyes move from left to right does perception take place, and the number of pauses varies greatly according to the age and reading experience (it is better to use this phrase than the word "education") of the subject of experiment, the practised reader being able to take in the sense of what he is reading with many fewer fixative pauses than the unpractised. In addition to the forward movements it is found that there are frequent movements of regression, especially with children and slow readers, who, as one would expect, take longer to perceive the meaning of a word or group of words than the older and more practised reader, but he too may have many regressions when reading an unfamiliar language or with his mind fixed on the style or spelling rather than on the context, as in proof-reading. The number of words covered by a fixation varies greatly, familiarly associated words and well-known phrases being read at a single fixation. The time occupied by the inter-fixation movements is very short compared with that occupied by the fixation pauses, probably not more than one-tenth, the rate being so great as to render it impossible for any perception to take place during movement. An interesting observation of L. Dor, of Lyon, quoted by Miss Vernon, shows that the causation of the movements is reflex, depending on stimulation of the peripheral part of the retina in the direction in which the eye is moving. The case was that of a woman with loss of the right half of the field in the right eye and such a degree of amblyopia in the left eye that with the left eye alone she was unable to read. When the left eye was occluded she was unable to read with the right, but when both eyes were open the stimulation of the retina of the left eye, although powerless to enable the left eye by itself to read, was yet sufficient to act as a stimulus to the right eye to move to the right and reading became possible.

In a further report lately published under the auspices of the Medical Research Council [2] Miss Vernon returns to the subject and describes a somewhat elaborate apparatus by means of which these movements can be studied by photographing a beam

[1] Brit. Jour. of Ophthal., March, 1928, p. 130.

[2] The Movements of the Eyes in Reading. H.M. Stationery Office. 1930. Pp. 45. 9*d*.

of light reflected from the cornea on to a continuously moving film. Experiments were carried out on nine subjects in the Psychological Laboratory at Cambridge. It was found that voluntary movements of fixation were performed accurately in only 20 per cent. of cases, on the average. There was a tendency, increasing with the angle of movement, for the eye to stop short of the correct point by an angular distance of the order of 1°, but occasionally it went too far. Return movements in reading from the end of one line to the beginning of the next were often either too short or too long. As might be expected, the rate of reading and the number of regressions for any individual subject of experiment varied greatly according as the matter read was such as to excite his personal interest or not. Fatigue in reading is chiefly due to the eye movements, whether they are of too small an angle necessitated by small print, each movement requiring to be more accurate than when the print is large or whether the backward movement from one line to the next is too long. It is said that lines of print not more than 8·5 cm. in length are the least fatiguing to the eyes.

THE LATE PROF. GLEY.

By the death of Marcel Eugène Emile Gley, in Paris last month, France has lost one of the most distinguished workers in physiology. Born 73 years ago in Lorraine, Gley was educated at Nancy, and later studied at Montpellier. He migrated to Paris and became assistant to Charles Richet in the department of physiology in the Faculty of Medicine. Later he was appointed to the Çhair of Biology in the Collège de France, an office which he held until his death. His work on the influence of peptones on the blood and liver, and above all his studies on the ductless glands, particularly the thyroid and parathyroid, gave Gley an international reputation. During the 'nineties over 40 publications on these glands are to be found in the *Comptes rendus de la Société de Biologie* and the *Archives de Physiologie*. Many workers from foreign lands came to work in his laboratory in the Collège de France. Last July the Institut de France awarded him the Osiris Prize in Physiology, and all arrangements had been made for its presentation.

"A.O."

Prof. Raikichi Arima, who directs the institute for experimental medicine known by his name in Osaka, Japan, remarks[1] that there are two ways of fighting tuberculosis. One is by dispensaries, sanatoriums, isolation of infectious cases, and so forth. The other is by the immunisation of the young against the disease. The first method, he says, has already proved to be not only too costly but unattainable, so that we are thrown back on the second method, with which in the West the names of Calmette and Guérin are associated. He recalls the remark of Prof. B. Lange at the Lübeck inquiry:—"I am convinced that in the tuberculosis campaign use must be made of every means, in itself harmless, from which there is any expectation of result." Medical practitioners are meeting every day human beings who are no longer susceptible to tuberculosis owing to having lived in a tuberculous milieu; it has been the aim of Prof. Arima and of his co-workers, Aoyama and Ohnawa, to imitate the example set by nature. The vaccine which they call A.O. is prepared from an antigen which immunises guinea-pigs and rabbits against an infection with highly virulent tubercle bacilli. It consists of bacterial protoplasm from many strains of the human type of tubercle bacillus, absolutely non-pathogenic because it is incapable of germination, easily measurable biologically, and easily absorbable, for the lipoid and fat content of the bacilli has been removed by the addition of a saponin derived from a species of sapindus, native to Japan. The vaccine has been used in prophylaxis, treatment and diagnosis. An injection of A.O. in a tuberculous patient reduces the leucocyte count after 30 minutes—the "Yoshida" reaction, which is held to be characteristic of active disease. After prolonged test on animals, A.O. was given to four volunteer tuberculous doctors, on whom its harmlessness was demonstrated. In 1927 the vaccine was recognised by the Japanese Government as a harmless product, and from 1927 to 1929 something over 150,000 persons were inoculated with it. Prof. Arima gives the result of 155 answers to a questionaire in which the percentage of cases cured or improved is never less than 53 (for severe pulmonary tubercle), and is as high as 96 for slight pulmonary affections, and 100 for tuberculosis of the skin. At an elementary school 413 children were inoculated, with the result that they lost their tendency to catch cold, to cough and sweat at night, and to glandular swelling; and an improvement was evident in appetite, nutrition, complexion, spirits, and general condition. In many cases, he says, it would be correct to speak of a change of life (*Lebensumschwung*). Confirmatory experience has appeared in the German medical press following an address by Prof. Arima at a recent Naturforscher und Aerztetag.

[1] Tuberkulose-Schutzimpfung mittels A.O. Forschung und Fortschritte, Nov. 1st, p. 410.

TREATMENT OF ACUTE RHEUMATIC FEVER.

The usual treatment of rheumatic fever is not supposed to have much, if any, effect on the more serious manifestations of the disease. Salicylates have strong antipyretic and anti-arthritic properties, but subcutaneous nodules may develop in patients under the full influence of these drugs, and their power to prevent carditis is by no means easily demonstrable. The search for other remedies, therefore, continues. Some time ago Small[1] claimed that serum prepared by inoculation of animals with *Streptococcus cardio-arthritidis* is able to arrest the progress of the disease, and Hitchcock, McEwen, and Swift[2] now report that they have carefully investigated these claims. In a series of cases exhibiting various rheumatic manifestations they used three types of antistreptococcal serum—viz., a commercial antiscarlatinal serum, a sample serum supplied by Small himself, and a serum prepared by the inoculation of a heifer with a green-producing streptococcus isolated from a subcutaneous rheumatic nodule. In none of these cases were unequivocal results obtained to show that the serum had produced any benefit; on the other hand, undesirable reactions following the serum were noted in 23 out of the 26 cases. Success, of even mild degree, could be claimed for the treatment in only 6 out of 20 cases which were properly controlled, and in none of these was the improvement more than what may follow simple rest in bed. Although the number of cases observed is small it seems fair to conclude that a general adoption of antistreptococcal serum in the therapy of rheumatic fever is by no means justified. A

[1] Small, J. C., Amer. Jour. Med. Sci., 1927, clxxiii., 101.
[2] Hitchcock, C. H., McEwen, C., and Swift, H. F., Ibid., October, 1930, p. 497.

ards salicylates, Leech[3] has recently published ervations on 67 children, the subjects of actual or ential rheumatic heart disease, to whom this ıedy, in the form of aspirin (grs. 20 daily) was ninistered over periods of six months. The ldren chosen were those showing no obvious evidence rheumatic activity. Not only did they show ver relapses and gain more weight than those in a ıtrol series, but also the signs of established cardiac ions diminished in more of the treated than the treated group.

THE NOBEL PRIZEMAN IN MEDICINE.

THE Nobel Prize for Medicine for 1930 has been arded to Dr. Karl Landsteiner, formerly of Vienna, l now of the Rockefeller Institute for Medical search in New York. His name is best known in ınexion with his work upon the blood groups, and may be truly said that he laid the foundations of present knowledge of this subject. Since the work Shattock in 1899 it had been recognised that some man sera had the power of agglutinating other man red cells, but this was regarded as a pathological enomenon. Working in 1900 and 1901 Landsteiner t only showed that agglutination of human red cells ıld be brought about by other human sera in the sence of any pathological conditions, but was able demonstrate that human beings could be ranged in tain groups on the basis of this reaction. Actually ndsteiner recognised what are now known as ups A (II.), B (III.), and O (IV.). In 1902 Decastello d Sturli, following up his work with his approval, monstrated the existence of Group A B (I). Land- iner showed that the constitution of the groups ıld be accounted for by the postulation of two glutinable substances or (as they are now called) glutinogens resident in the red cells and two homo- ous agglutinins resident in the sera. He believed t the agglutinins were reciprocal to the agglutı- gens, but this has since been proved not to be so. discovery was allowed to remain almost unnoticed years, although he specifically pointed out its ssible applications both in the practice of blood nsfusion and in the determination of paternity. e late war, with its great increase in the practice of od transfusion, brought his work into notice and ved the correctness of his opinions on this subject; only within the last few years has the truth and portance of his views on hereditary transmission the agglutinogens become generally recognised.

HE VOLUNTARY HOSPITALS OF LONDON.

NCE more the Statistical Review of the Work Finance of the London Hospitals, which has been issued by King Edward's Fund, is full of ouragement. Its financial and vital statistics, ch cover the year 1929, suggest that, so far as the ital is concerned, the voluntary system is meeting ever-growing strain upon it. All the figures e gone up—there are more beds, more patients, e expenditure, and more income. There has been aggregate deficit since 1926, and although the regate surplus last year was smaller than in 1927, was nearly three times as large as in 1928. y in one direction are the figures lower. The ıber of new out-patients has fallen by 4000, ch is probably accounted for by the physical tations of the out-patients' departments which, broadly speaking, will not hold any more. On the other hand, the attendances of this smaller number of patients of the 138 hospitals under review have increased by 84,000, which is clearly attributable to the larger course of treatment in such departments as light and massage, required by many patients. How much the pressure upon out-patients' depart- ments has grown is made plain by the increase of 1,154,000 attendances since 1925. Selective methods may reduce the actual growth of out-patient totals, but the constant introduction of new forms of treat- ment is certain to augment the attendances, and it is significant that while out-patients have increased by only 11 per cent. during the last half decade, their attendances have increased by 21 per cent. The experience of the great provincial hospitals is probably not very dissimilar.

Looking at the comparative figures of the last five years we find that 1810 beds have been added to the metropolitan hospitals during that period, to which 1929 contributed 380, the smallest increase since 1926, and a heavy falling-off from the year before. In view, however, of the cost of such exten- sions the addition of no more than a fraction over a bed every day instead of a bed and three-quarters, is not gravely discouraging. A "boom in beds" cannot be expected every year. That these 380 new beds only just met the demand is shown by the curious coincidence that the average number occupied increased by exactly that figure. In the report of an inquiry which King Edward's Fund recently made into the causes, incidence and extent of vacant beds, it is pointed out that any improvement in the percentage of beds occupied would, in effect, be as valuable as the building of additional bed accommoda- tion. The difficulty of keeping beds as fully occupied as possible, and at the same time of keeping a pro- portion available for emergencies, confronts most hospitals daily, but the report shows that the larger and the special institutions work up to approximately 90 per cent. of their capacity in those beds over which any effective control can be exercised. Those which are most frequently empty are "pay beds" chiefly because their availability is at present insufficiently known. With an increase of 10,900 in new in-patients last year, making a growth of 38,000 since 1925, the rate of increase in the beds occupied was higher than the rate of growth in the bed complement. Happily, as in-patients have increased, their average period of residence has fallen in the quinquennium by a whole day.

Another, and equally happy, circumstance in a different sphere is that, at £3,600,000, the maintenance income of the metropolitan hospitals in 1929 was a record, with an increase of £168,000 over the preceding year. Most of the improvement was, however, due to the uncertain element of legacies, though receipts from patients were more by £78,000. The growth of this source of revenue may reasonably be expected in the future to offset at the least the fall in donations. Over the whole period, however, there has been a large increase in voluntary gifts. To such gifts the hospitals still look for about one-half of their expendi- ture, which last year amounted to £3,550,000. Increased work is accoutable for some four-fifths of the growth in expenditure since 1925. In addition to the maintenance receipts, £220,000 was given for endowment and £865,000 for buildings and equipment; thus, the total receipts of the 135 hospitals last year reached the total, again a record, of £4,685,000. There could be no better proof of the solid progress that is being made with the allied problems of maintenance and expansion.

eech, C. B., Jour. Amer. Med. Assoc., Sept. 27th, p. 932.

A SUCCESSFUL ANTITUBERCULOSIS SCHEME.

SHEFFIELD has a tuberculosis scheme whose success (see p. 1039) is attributed to complete coöperation on the part of general practitioners in the town. In Sheffield there has never been any voluntary tuberculosis association, and the whole of the scheme has been built up under the ægis of the public health department, which has aimed from the beginning to enlist the practitioners' help. Effort has been made to obtain the services of tuberculosis officers with special clinical experience, whose opinion in a consultant capacity would be of real service to the family doctor. Since 1913 observation beds have been in use to facilitate diagnosis in doubtful cases, and for the same reason a modern X ray apparatus was installed at the dispensary in 1919. Practitioners have been encouraged to send doubtful cases to the dispensary for examination, and the tuberculosis officers are prepared to see patients at home in consultation with their own doctor. Care is always taken to give the doctor full information about his patient after examination and after discharge from hospital. The provision of institutional beds is so generous that when a practitioner has a patient likely to be benefited by hospital treatment there is no delay in his admission. At present the beds number over one per thousand of the population, without counting the King Edward VII. Hospital for surgical tuberculosis. In the early days patients were sent to outlying sanatoriums and a site for a municipal sanatorium was sought at a distance from Sheffield. Now, however, the principle has become established of having all the hospital beds within easy reach of the city. Most of them are close to a tram terminus or within an easy 'bus ride. When relatives are able to visit patients twice a week admission to hospital becomes more popular and there is less need for persuasion in the part of the practitioner. Special point has been made recently of providing beds for children with hilum tuberculosis, with the idea of so increasing their resistance as to prevent the onset of acute tuberculosis in later life; there is certainly little of the latter in Sheffield. All forms of tuberculosis are now being brought within the ken of the dispensary at an earlier stage. When King Edward VII. Hospital was first opened all the 130 beds were occupied by cases from Sheffield itself, many of them advanced cripples. At the present time only about 80 of these beds are needed for Sheffield and the cases come under treatment before crippling has become advanced. The other beds are available for the use of the surrounding districts. The scheme which we have sketched out is one to inspire confidence, and it is not exaggeration to say that the Sheffield scheme is based on the confidence of the local medical profession.

SILICOSIS IN THE POTTERY TRADE.

THE suggestion [1] that the problem of silicosis is becoming urgent in various industries carried on in this country is supported by a Home Office memorandum addressed to those concerned with the pottery industry. It states that since the Various Industries (Silicosis) Scheme came into force in February, 1929, no less than 113 cases, including 54 deaths in this industry, have been reported to the medical inspectors, and the adoption of further precautions for the prevention of silicosis are held to be required. Draft regulations embodying the proposals of the Departmental Committee on Workmen's Compensation for Silicosis in the Pottery Industry have now been drawn up. Since they are the outcome o careful inquiry, the Home Secretary hopes that the will be accepted without question. But it will b open to occupiers, workpeople, or others affected t lodge objections, and any objections of substanc will be considered before the regulations are finall made. The proposals of the committee include exter sions of the requirement as to exhaust ventilation; mor effective measures for cleaning potters' shops, includ ing the provision of impervious floors and shelve or other accommodation for moulds; and extensio of the requirements as to overalls and head covering cloakroom and messroom accommodation, and lava tories. In No. 10 of the draft regulations, restrictio of certain tasks, such as the cleansing of the floo of potters' shops and scouring shops, to an "adu male" suggests that evidence exists that wome and adolescents are more liable than grown men t contract silicosis. In the gold-mining industry n women are employed, so that experience there canno be the source of this regulation. Regular medica inspection of the exposed population, and especiall rigorous inspection of candidates for employmen is one of the measures most relied on in South Afric and we note with satisfaction that the Home Secr tary proposes to make provision for examinations b a medical board, set up under the Workmen's Com pensation (Silicosis and Asbestosis) Act of last sessio for workers in certain pottery processes. The annu report for 1929 [2] of the Miners' Phthisis Medical Burea on the Rand gives figures which are not easy t interpret for anyone not familiar with the metho of analysis to which they have been subjected; b evidently satisfaction is felt with the progress mad in preventing the incidence of the disease in "new Rand miners—that is, those men who have worke underground only since 1916. The fact that th disease takes a long time to develop, and that ever year the number of men classed as new Rand miner is increased by recruits to the service, makes th statistical presentation of the ascertained fac exceedingly complicated. But the chief lesson taugh by this amazing record of the organisation built u to cope with the ravages of silicosis is that the utmo effort must be made to prevent the scourge fro making further invasions into the industrial life our own country.

PRACTITIONERS AND MENTAL TREATMENT AC

MEDICAL practitioners who wish to be approved b the Board of Control for the purpose of makin recommendations in respect of voluntary patien below 16 years of age and temporary patients (und various sections of the Mental Treatment Act, 193 can obtain the necessary form of application b writing to the Board at Caxton House West, Tothi street, London, S.W., marking the envelope "M.T.D in the top left-hand corner. As the Act comes in operation on Jan. 1st, 1931, intending applicants a asked to write for this form immediately. The Boa states that it cannot entertain applications fro medical practitioners of less than five years' standin on the Medical Register.

THE next session of the General Medical Coun will commence at 2 P.M. on Tuesday, Nov. 25t when the President, Sir Donald MacAlister, will tak the chair and give an address. The Council w continue to sit from day to day until the terminatio of their business.

[1] THE LANCET, Nov. 1st, p. 962.

[2] 1930. Pretoria Union of S. Africa Government Print Pp. 64. 3s. 6d.

MODERN TECHNIQUE IN TREATMENT

Series of Special Articles, contributed by invitation.

CCCX.—NEONATAL ASPHYXIA.

PART I.

THE treatment of the asphyxiated new-born baby as undergone radical changes in recent years. one are the days of barbaric violence when deeply nocked infants with white asphyxia were waved ver the operator's shoulder as in the "Schultze" ethod, or, as suggested by Byrd, bent double nd then extended, thus frequently being killed y increased shock and rupture of the liver. I am tisfied that the baby with white asphyxia is never ved by artificial respiration in the ordinary sense the words. An infant with white asphyxia who is ceiving artificial respiration may breathe and recover. ut this, though probably claimed as a triumph for the ethods of violence, should really be regarded as somewhat remarkable recovery despite the added auma to which the child had been subjected. here is some danger nowadays of going to the her extreme by attempting to replace the old olent methods by others too complicated, or eding too much in the way of elaborate and pensive apparatus, to be of any use to the actising obstetrician. For example, an apparatus ed in an American institution provides an airtight binet wherein the asphyxiated child is placed th only its head outside. The air in the cabinet then partially exhausted by an electric pump out 15 times a minute and thus atmospheric air sucked through the ordinary air passages into e child's lungs. Thence it is expelled when the r-pressure in the cabinet is allowed to return to rmal. There appears to be no doubt about the icacy of this apparatus in making asphyxiated fants breath. The fault appears to be, on the ntrary, that children with extensive intracranial emorrhages are caused to breathe though they are omed to subsequent death as the result of the head jury. But apart from this disadvantage the paratus is quite impossible to provide except in ge maternity institutions. A somewhat less mplicated machine has been described and used in is country by Prof. Louise McIlroy; the child is pt warm in a box with an atmosphere of 6 per cent. rbon dioxide in oxygen. But the advantages be gained from such an apparatus would seem to hopelessly outweighed by the practical difficulties. The ordinary accoucheur needs a straightforward hnique requiring only simple apparatus, and e which he can employ under any circumstances. is necessary to distinguish between the methods table to the "blue baby" and those required for es of asphyxia pallida in which the child is white l limp.

Blue Asphyxia.

First with regard to "blue babies"—those suffering m "asphyxia livida." It may at once be stated t these infants are comparatively difficult to l and artificial respiration need not be regarded necessarily a murderous procedure. But preferably atment such as that subsequently to be outlined uld be used. And for such treatment it will be n that some form of mucus extractor is essential. must be emphasised that clearing the upper air sages is the first essential in the treatment of cases of asphyxia in new-born babies, and further, t a suitable extractor forms an integral part of the obstetric equipment of every person attending a confinement. The type to be employed must also possess, not a metal end, as is so frequently illustrated, to go down the child's throat, but a soft rubber one which will cause no injury to the delicate tissues of the infant.

The procedure, then, to be adopted in the case of a baby with blue asphyxia is as follows: wipe all mucus, &c., away from the nostrils with a soft mop of gauze or cotton-wool. Wipe the mucus out of the child's mouth with a small piece of soft gauze twisted around a little finger (gauze is better than wool for this purpose since it is less likely to slip off the finger). Do not be in a hurry to separate the child from the mother—it is quite unnecessary to clamp and divide the cord at this stage. Pass the soft nozzle of the mucus extractor, guided by a little finger, well to the back of the infant's pharynx and suck out all moisture. Repeat the process, directing the nozzle successively to all parts of the mouth, nostrils, and pharynx where mucus has collected until the whole of the upper air passages has been cleared. In all probability the child will now breathe; if not, support the back of the child's chest on the palm of one hand and allow the head to drop slightly back so as to open up a good airway. If necessary, hold the tongue forward either by a finger and thumb, holding a piece of gauze to give a grip, or by a sharp single pronged clip forceps such as a "towel-clip," or by means of a suture passed through the tongue with a fine needle; rub some brandy gently with a little finger on the gums and on the inside of the lips and cheeks; compress the thorax gently with a hand and then allow the recoil to inspire air into the lungs. Repeat this manœuvre slowly—certainly not more often than six times a minute—and gently.

Even smacking the blue baby or stimulating it by splashing a little cold water on its skin will probably do no harm, and usually such infants will respond fairly quickly to the treatment described above and will start breathing normally. Then they can be separated from the mother in the usual manner. But should normal respiration not easily be established and particularly should the infant gradually change from the state of being blue while its limbs exhibit good muscular tone, into the condition of limpness associated with pallor, then it is essential that the treatment appropriate for white asphyxia should immediately be adopted. It is because of this danger of change from blue to white asphyxia that any violent movements such as those of artificial respiration are to be deprecated even in the treatment of the milder condition, otherwise in consequence of such violence this condition may become changed into the more serious one.

Before leaving the subject of blue asphyxia mention should be made of a suggested line of treatment by allowing some fœtal blood to escape by dividing the umbilical cord. It is claimed that by thus relieving the circulation the embarrassed fœtal heart is enabled better to function and that the respiratory centre, in receipt of a more efficient blood-supply, is thus enabled to initiate normal respiration. This, of course, would not apply to cases of "asphyxia pallida"; and even in blue babies the loss of blood to the circulation does not seem to me to be advisable. I have consequently had no experience of this line of treatment.

LESLIE WILLIAMS, M.D., M.S. Lond., F.R.C.S. Eng.,
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SPECIAL ARTICLES

MEDICINE AND THE LAW.

Post-mortem Examinations.

IN dealing with matters which fall under this section of medical practice, the propriety of a post-mortem examination, and, generally, of the circumstances when autopsies are indicated, frequently have to be discussed. The statutory provisions governing post-mortem examinations are to be found in the Coroners Act, 1887 (50 and 51 Vict., c. 71), Section 21, and the Coroners (Amendment) Act, 1926 (16 and 17 Geo. V., c. 59), Sections 21–4. The 1887 Act was in part a consolidating Act, and restated existing law.

But an important change was made in 1926 which enabled a coroner to have a post-mortem examination without necessarily proceeding to hold a formal inquest, and questions on the subject are often put to us. The statistics showing the extent to which this concession has been employed are not yet complete. The 1926 Act was in operation for eight months only of the year 1927, since it did not take effect till May 1st, 1927. The annual criminal statistics down to 1927 showed the numbers of deaths reported to coroners, the number of lunatics and persons in institutions where a post-mortem examination is always made, the number of deaths investigated by a coroner where no inquest was held, the number of inquests and the number of post-mortem examinations ordered by the coroner. Since the operation of the 1926 Act the statistics show the number of post-mortem examinations "directed or requested" by the coroner, and this total is subdivided into "inquest cases" and "non-inquest cases." For the year 1927, when 60,511 deaths were reported to coroners, the eight months' figures of post-mortem examinations directed or requested by coroners were 12,904 in inquest cases and 3616 in non-inquest cases. For the year 1928, when the total of deaths thus reported was 62,501, the post-mortem examination figures were 11,127 in inquest cases and 6791 in non-inquest cases. The non-inquest figure, it will be noticed, was more than doubled at the end of the second year of the full working of the change introduced by the 1926 Act. The figures for 1929 will not be published till the official volume of Criminal Statistics for England and Wales of that year appears; it is not to be expected before next year. In the meantime the Home Office has stated that in 1927 there were 24 boroughs and 5 counties in which no use had been made of the new power; in 1928 there were 21 boroughs and 7 counties. The saving of time, trouble, and expense by having a post-mortem examination without necessarily having an inquest is so conspicuous that the power is likely to be constantly more freely used. It may be added that the coroner is now remunerated by the year and not by the inquest, and that adequate fees are ensured (by Section 23 of the 1926 Act) for medical practitioners who hold post-mortem examinations and give evidence at inquests.

Birth Registration Offence: Story of Suppositious Child.

A woman was convicted at Sunderland recently on a charge of perjury in respect of registering the birth of a child. The case put forward by the prosecution was remarkable. The accused, a married woman 37 years of age, was said to have adopted an illegitimate child and to have passed it off as the offspring of herself and her husband. The child was produced in court and was identified by a widow whom, in the light of the magistrates' decision, one must regard as the actual mother. The widow stated that the child was born to her on Jan. 15th, and that on March 25th she advertised for someone to adopt it. According to the prosecution, the accused bought long clothes for the baby, and had it brought to her own house by night on April 18th; the real mother came to the house every morning for a fortnight ostensibly to attend to the accused and the child she was addressed as "nurse." A medical practitioner happened to be attending the accused for pleurisy she took advantage (it was said) of this circumstance to represent that he was attending her in her confinement. A note bearing his name was sent to the medical officer's office to notify the birth as having occurred on April 18th—the date when, according to the prosecution, the three-months'-old child was conveyed to the house. The doctor repudiated the note. His evidence was that, during his visits to the accused, she told him she was pregnant, but declined to let him examine her. On April 19th he was sent for and found her in bed with a child all wrapped up she said she was all right, and that nurses were attending her. Accepting her story, which there was apparently no reason to suspect, he subsequently signed a certificate enabling her to obtain maternity benefit. The chief inspector of police said he obtained from the accused the name of the woman who was attending her, but he was unable to trace any such person. The accused had the child christened in her own name, and she registered the birth stating it to be the child of herself and her husband. On the other side the defendant flatly denied the story of the adoption. Her husband and neighbours gave evidence in support of her statements that the child was born to her on April 18th. Having found her guilty, the magistrates fined her £10. This was the maximum on summary conviction until in 1925 the penalty was increased to £50. Had the charge been sent to the assizes for disposal—and such disputed issues of fact might well be thought more appropriate for decision by a jury—the maximum sentence would have been seven years' penal servitude.

In 1926, when the law of death certification and registration was amended, critics complained that there was still every opportunity left for premature burial and every facility for the concealment of crime. Irregularities in connexion with the registration of births are perhaps not so serious as those with respect to deaths, but the Sunderland case suggests that here, too, the law may require re-examination. The medical practitioner is not primarily responsible either for notifying or for registering a birth, but existing statutes put upon him an indirect or secondary responsibility. He would be closely concerned in any proposed change.

Medical Privilege Again.

The difficulties of the medical practitioner who is asked in the witness-box to disclose matters of professional confidence were illustrated afresh lately in the King's Bench Division. A practitioner from University College Hospital (subpœnaed to give evidence) asked for the protection of the judge on the

ound that his testimony concerned matters privileged between doctor and patient. Mr. Justice cnaghten replied that there was no such privilege own to the law and that the witness was bound answer any relevant question of which he had owledge. Counsel interjected a remark that the tness was putting forward the view of the hospital thorities, whereupon the judge professed astonish-nt that the hospital authorities should be so norant of their duty. Hospitals, we may guess, are t only concerned with professional etiquette but o dislike the disturbance of medical and surgical vices which occurs if their staffs are summoned to nd what may be many hours in the law courts. gally they are powerless to protest. If a hospital uses to send a witness, the court can direct the ole personnel of the hospital to attend. This tential threat was held over a hotel manager lately en he showed reluctance to allow his domestic ff to appear as witnesses in divorce cases; it was plained to him that the whole staff of the hotel ght be ordered to attend if he made any difficulty.

On the question of medical privilege and the tection of a patient's confidence, the fact that a ge insists on having the evidence should not deter witness from making his protest. There is a lespread feeling that medical privilege should eive statutory recognition in the interests of ients in general. This change will not be brought ut unless public opinion is stirred. It is necessary keep the matter before the public; every practi-ner who protests against being asked to disclose patient's confidences does good service for this pose.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

CIENTIFIC COMMITTEE FOR MEDICAL INVESTIGATION.

A SCIENTIFIC Advisory Committee on Medical ministration and Investigation has been appointed he Secretary of State for Scotland. The reference he Committee is: "To assist the Department of lth for Scotland in applying the results of scientific arch to the details of public health administration in promoting such medical investigations as come in the sphere of the Department or of the local horities in Scotland." The members of the mittee are as follows:—

Alex. Bowman, D.Sc., Scientific Superintendent of Marine Laboratory of the Fishery Board for Scotland.
C. H. Browning, F.R.S., Professor of Bacteriology in University of Glasgow.
E. P. Cathcart, F.R.S., Professor of Physiology in ersity of Glasgow.
F. A. E. Crew, Professor of Animal Genetics in the ersity of Edinburgh, and Director of Animal Breeding arch Department.
Walter Fletcher, M.D., F.R.S., Secretary of the cal Research Council.
Robert Greig, Secretary of the Department of Agricul-for Scotland.
John Jeffrey, Secretary of the Department of Health cotland.
J. Parlane Kinloch, Chief Medical Officer of the rtment of Health for Scotland.
A. S. M. Macgregor, Medical Officer of Health for ow.
T. J. Mackie, Professor of Bacteriology in the University linburgh.
J. J. R. Macleod, F.R.S., Professor of Physiology in niversity of Aberdeen.
Robert Muir, F.R.S., Professor of Pathology in the rsity of Glasgow.
J. B. Orr, Director of the Rowett Institute for Research imal Nutrition, Aberdeen.
W. J. Tulloch, Professor of Bacteriology in the rsity of St. Andrews.

Dr. Parlane Kinloch is the chairman of the Committee, and Mr. George Wallace, of the Department of Health for Scotland, is the secretary.

The appointment of the Committee follows on the conference of research organisations which was held in Edinburgh in November of last year. A more intensive use of Scottish research material and the correlating of work in the biological sciences, having a bearing on medical as well as on agricultural, fishery, or other fields, was urged at the conference. It was also urged that a Scientific Advisory Committee would secure for community health purposes the application of the most recent results of medical research.

THE BRIDGE OF ALLAN SPA.

By invitation of the provost and town council of Bridge of Allan and Mr. Holdsworth Lunn, chairman and managing director of the Spa Hotel, a large and distinguished company attended the reopening of this once famous Scottish spa on Oct. 30th. The Scottish Department of Health was represented by Sir Leslie Mackenzie and Dr. Alex. Shearer. In declaring the spa open Sir Humphry Rolleston recalled the establishment of the well-house at Airthrey in 1821 by Sir Robert Abercromby, after a favourable report on the medicinal value of the waters by Prof. Thomas Thomson, of Glasgow. In the middle of last century 30,000–40,000 people visited Bridge of Allan every year to take the waters, but no effort was made to modernise the equipment of the spa. Now, he added, the place had a triple qualification for assured success: great natural advantages in climate, scenery, and associations; exceptional chemical composition of its water; and a fine up-to-date equipment.

Dr. Fortescue Fox said he had not found more than 10 or 12 waters in the world precisely comparable with those of Bridge of Allan. Their total saline strength was about 10 parts per 1000—i.e., nearly isotonic with the body fluids, and thus suitable for drinking, while their calcium content was exceptionally high (ca. 4·5 per mille), and in a highly assimilable form. Llandrindod and Llangammarch in Wales were similar, but were not so rich in calcium (about 1 per mille). Woodhall Spa came nearer (3·5), but was too strong in table salt to be drunk without dilution. Homburg and Kreuznach, in Germany, had about half the amount of calcium. The nearest comparison was with the great springs of Saratoga (New York), used for functional disorders of the stomach, gastric and intestinal catarrh, and constipation; and the United States of America possessed three other waters of this type. Owing to the chloride, calcium and other elements contained in them, the Bridge of Allan waters covered a rather unusually wide range of usefulness in the prevention and cure of illness. The four chief classes which would derive benefit from them were: (1) delicate children, (2) people affected with respiratory and (3) with digestive troubles, and (4) many people suffering from certain forms of rheumatism and other exudative diseases. Mr. Judd Lewis, D.Sc., Chairman of the International Standard Measurements Committee, confirmed the remarkable content of calcium, iodine, and bromine in the spring water.

After the opening ceremony opportunity was given for visitors to examine the establishment, which has been entirely reconstructed. Although small, it forms a complete unit of treatment, by baths, douches, inhalations, radiation, and electricity, and there is a sun lounge entirely fitted with Vita-glass. The spa will be open throughout the year, and as its situation gives it much sunshine and complete freedom from

cold winds, it should be a welcome refuge for visitors in the period from February to April.

A NURSING HOME FOR OFFICERS.

The Officers' Association (Scottish Branch) has established a nursing home in Edinburgh for ex-officers. In opening the institution, the Duchess of Atholl commented on the difficulty that such men had to fit themselves into other forms of work or to find alternative work of any kind. Reductions in the Services were inevitable after a great war, but people did not always remember what acute personal problems might be the result of these reductions. The home is for officers and ex-officers of the Royal Navy, the Army (including the Territorial Army), or the Royal Air Force, who must either be or become members of the Officers' Association. No charge is made for maintenance or nursing, but the officers are responsible for the payment of their physicians, surgeons, and for treatment, subject to any special arrangement between individual officers and the nursing home committee. The patients may select any physician or surgeon to attend them.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

PUBLIC HEALTH NEEDS IN THE FREE STATE.

THE Department of Local Government and Public Health is making persistent endeavours to persuade the more dilatory county councils to fulfil their statutory duty of appointing county medical officers of health. The County Dublin is one which has so far neglected its duty in this respect, and, in a recent letter to the Dublin County Council, the Department points out that there are special reasons why the health of the metropolitan county should receive attention. It contains within itself the largest borough in the country—namely, Dun Laoghaire—while its contiguity to the capital city exposes it to special dangers, and imposes on it special responsibilities. Moreover, though much of County Dublin is rural, even the rural areas have a bad record as regards health. Both in general mortality from all causes and in infant mortality the rural areas are worse than the urban areas in the same county as previously constituted. The infant mortality of the rural areas of the county exceeds by over 73 per cent. the average incidence in the rural areas generally of the whole of the Irish Free State.

The Department forwarded with its letter to the Dublin County Council a very informative memorandum dealing with the general need for public health reform in Ireland. It is stated that public health organisation has been hitherto definitely behind modern requirements, owing largely to the fact that the local health officers were primarily engaged in treating disease. In recent years more searching criticism, from external as well as internal sources, had made clear the need for reform. As a specific instance of such criticism is quoted the fact that as a result of a recent outbreak of typhus fever in the Letterkenny district, the United States public health authorities had placed an embargo on immigration from that area. It is stated, too, that the more effective control, from the point of view of health, of the production of food in England and Denmark had placed Ireland at a commercial disadvantage. Unless adequate assurance can be given that Irish meat supplies and dairy produce are above suspicion there is a danger of markets being closed to Iris exports. The Department points out that infectio and disease have little respect for arbitrary admini trative boundaries, and it is beyond dispute that th best results in the prevention of human sufferin and death are achieved in large areas of local contro

AUSTRALASIA.

(FROM OUR OWN CORRESPONDENT.)

A HYDATID REGISTRY.

THE College of Surgeons of Australasia have decide to establish a Hydatid Registry, an idea no doul suggested by the registry of bone sarcoma founde some years ago by the American College of Surgeon It is intended to investigate every possible instan of human infection in Australia and New Zealan and correlate the records obtained. The regist will be kept in New Zealand by Dr. R. A. H. Fulto of 2, Pitt-street, Dunedin, who has been appointe Registrar, and who will each year issue a summa of the cases, with the conclusions to be draw from their analysis. Sir Louis Barnett, Dr. H. T. Ackland, and Prof. F. Gordon Bell will be the Ne Zealand committee in charge of the investigatio Special record forms have been circulated to t medical superintendents of all hospitals in Austral and New Zealand, and are available for medic practitioners, on request.

Although hydatid disease is more common Australia than in any other English-speaki community, it is, perhaps, surprising that it is n in fact, more common than it is. Clunies Ros investigating hydatid infestation in New Sou Wales, found that from 15 to 16 per cent. of do examined in country districts harboured the *Tæn echinococcus*, with an average infestation of 18 p cent. These figures are probably well below the mar He found that the infestation of dogs in the vicini of slaughter-houses and at sheep stations w particularly high. This has been confirmed by t Melbourne University Veterinary School, who fou that 100 per cent. of the dogs around the municip abattoirs were infested. This infestation is attribut to the habit of throwing to the dogs all the viscera the slaughtered sheep. Prof. H. R. Dew, in his boo has shown that the distribution of hydatid disea in Australia follows the sheep distribution. Thou in New Zealand the proportion of sheep per head population is higher than in Australia, the proporti being 15·3 and 13·0 respectively per head of popul tion, hydatid disease is not so common in Ne Zealand as in certain parts of Australia. In Australi the disease is most common in Victoria, whilst i rarity in Queensland is remarkable. It is obvio that the main attack must be directed against t dogs, particularly those around slaughter-houses a on sheep stations. Clunies Ross, amongst oth recommendations, has suggested the administrati of arecolin hydrobromide to all such dogs once eve three months. Fondling or handling dogs, a allowing them to lick the hands, is regarded as dangerous practice, particularly for children.

There is no doubt that the establishment of t registry will be the means of increasing our knowled of the disease, and perhaps of directing great attention to methods of eradication.

[1] Med. Jour. of Austral., March 14th, 1925, p. 253.
[2] Hydatid Disease, Sydney, 1928.

LONDON MEDICAL EXHIBITION.

(*Concluded from p. 989.*)

WE conclude this week an account of the exhibition, ontinuing, first, the notes upon

Drugs and Pharmaceutical Preparations.

A stand of interest to many was that of INGRAM ND ROYLE, LTD. (45, Belvedere-road, S.E.), where a rge variety of the natural mineral waters in use for fections of the kidneys and bladder and for gout id rheumatism was displayed. The indications for ie employment of natural Vichy salts, Contrexéville, vian, Carlsbad, and Hunyadi-János waters are well nown, while the waters from other springs, such as ose of Ems, Kissingen, Plombières and Vittel, have any adherents, and the prescribing of Geisshubler ater is becoming popular in practice. That Abanah id Pharpar may, however, be as efficacious as the ordan was the reason for stands at which the claims Harrogate and Bath in different directions as lneological centres were justified. At Harrogate ie diversity of waters, each possessing distinctive haracteristics, was set out by a representative of the pa Directorate, while the chief analyst was also in tendance at the stand. The bathing establishments re are under the supervision of the Harrogate edical Society. The same coöperation between the thing establishments and the medical profession sts at Bath, and the exhibit sent by the corporation owed the famous Roman spa to be quite modern in scientific developments.—At the stand of SOAPLESS AM, LTD. (17, Dover-street, W.), a demonstration as given of the Sandor foam baths as an adjuvant to e treatment of rheumatism, nervous debility, and æmia, much printed evidence of the efficacy of these ths in the different conditions being advanced by ntinental physicians over the last four years.—E BRITISH ORGANOTHERAPY CO., LTD. (22, Golden-uare, W.), showed a wide range of glandular products d in particular asked medical visitors to give a trial Saccharomycin (B.O.C.), a fluid living yeast valuable furunculosis and acne; to Evatmine, a compound pituitary extract, adrenalin, and salt, of value in e treatment of spasmodic respiratory affections as uched for by a group of medical men; and to Opojex, ramuscular injections of which are of assistance ring labour.—At the stand of THE MOND STAFFORD-IRE REFINING CO., LTD. (Abbey House, Westminster, W.), particulars were being given of the germicidal perties of Monsol, attention being directed to its lity in obstetric practice.—THE BRITISH CATADYN ., LTD. (Southampton-row, W.C.), have given this me to a preparation of silver fixed in a non-colloidal m on suitable carriers, exposing a large surface. e testimonials to sterilising action come from official rces and establish a claim for a trial, as was said our columns recently (THE LANCET, August 2nd, 280) in referring to the severe and critical tests ich have been applied to the catadyn method of rilising water.

At their respective stands, such well-known firms BOVRIL, LTD. (148 to 166, Old-street, E.C.), C. ENO, LTD. (Fruit Salt Works, Pomeroy-street, .), CADBURY BROS., LTD. (Bournville), and HOVIS . (London, Macclesfield, Manchester, and Bristol), vided general information, documented where essary by medical evidence, as to their wares.—ERGEN FOODS CO., LTD. (Willesden, N.W.), showed s based upon their special breads, biscuits, and lth foods, as indicated in the dietetic treatment liabetes and obesity.—VIROL LTD. (Hanger-lane, ing, W.), exhibited a food designed to meet the ticular requirements of the age of growth, and the is able to call in support of their claims investi-on in the laboratories at Cambridge.—BRISTOL-ERS CO. (112, Cheapside, E.C.) showed the effer-ent saline laxative Sal Hepatica, and also a tooth te, Ipana, which contains an antiseptic of the hthalene series which has proved effective in dental disorders and elsewhere.—THERMOGENE CO., LTD. (Haywards Heath, Sussex), showed on their stand sample boxes of this medicated wadding for employment in situations where the troublesome application of poultices and fermentations used to be the routine. —Kaylene, which is a derivative of kaolin, was shown in several forms by KAYLENE, LTD. (7, Mandeville-place, W.), the claims for the preparation being that, in a colloidal form, it presents a combination of properties essential to an active adsorbent of intestinal toxins.—GENATOSAN, LTD. (Loughborough, Leicester), displayed their various productions, such as Sanatogen, Genasprin, Formamint, detoxicated and ordinary vaccines, and calf vaccine lymph.—TRUFOOD, LTD. (The Creameries, Wrenbury, Cheshire), asked attention for their milk products, including a Humanised Trufood, closely approximating to breast milk; this is a full-cream preparation for which the claim is made that it possesses the attributes of Grade A milk.

Surgical Instruments and Appliances.

JOHN WEISS AND SONS, LTD. (287, Oxford-street, W.). This firm, which contracts for H.M. and the Indian and Egyptian Governments, and supply British, foreign, and Colonial hospitals, displayed a large selection of instruments. These comprised many recent designs, and useful additions to an extensive range of ophthalmic instruments; an operation lamp, the patent of the firm, was noticed closely on account of its separate water-filter attachment for projecting microscopic slides, whose employment in teaching is being steadily found more valuable.—ARNOLD AND SONS (Savory and Moore (1928), Ltd.), in association with JOHN BELL AND CROYDEN (50–52, Wigmore-street, W.), displayed a large selection of hospital furniture and of instruments made of stainless steel.—The collection exhibited by DOWN BROS (21–23, St. Thomas's-street, S.E.), on three stands included many instruments recently made at the suggestion of well-known surgeons. In view of the discussion to be held in a few days at the Otological Section of the Royal Society of Medicine on precancerous conditions of the larynx, Howarth's improved model of Chevalier Jackon's Bronchoscopy and Œsophagoscopy instruments came in for close notice.—THE HOLBORN SURGICAL INSTRUMENT CO., LTD. (26, Thavies Inn, Holborn Circus, W.C.), asked visitors to ascertain for themselves the advantages of the Holborn twin pump operation table, as the mechanism for placing the subject in the best position for operation is ingenious and easy to work with the foot, while the head and leg straps are conveniently adjustable. The firm also showed a large selection of electric apparatus.

RADIUM ELECTRIC, LTD. (24, Grosvenor-gardens, S.W.), exhibited the Q-Ray Electro-Radium Compress, a recent development in the field of mild radium therapy. This is a combination of dry heat and radium. The radio-active strength, as certified and guaranteed by the Berlin and Vienna Radium Institutes, is 0·013 mg. The compresses can be obtained on loan for testing purposes by medical men without obligation.—T. J. SMITH AND NEPHEW (42, Tavistock-square, W.C.). Through the regular houses for the distribution of surgical material the elastroplastic bandages of this firm can always be obtained. Elastroplast is the trade name for a resilient and adhesive dressing which is supplied either ventilated or in a form which permits bathing without removal. The bandages can also be obtained impregnated with drugs, the lesion indicating the particular kind of medicated dressing to be employed.—BRUCE GREEN AND CO., LTD. (14, 16, 18, Bloomsbury-street, W.C.), make a speciality of optical appliances and showed all types of instruments for ophthalmic work—e.g., optical trial cases, facial measuring sets, ophthalmoscopes, and retinoscopes.—R. H. DENT (309, Oxford-street, W.) displayed the "Ardente" apparatus in different types.—PHILIPS LAMPS, LTD. (145, Charing Cross-road, W.C.), on two stands, showed the Metalix-portable X ray outfit, and throughout the exhibition its simplicity and compactness were demonstrated to visitors. The necessary current can be obtained

from the ordinary light mains.—THERMEGA, LTD. (53, Victoria-street, Westminster, S.W.), showed the Thermega electric radiant blanket, which has been found useful in supplying a dry warmth in a convenient manner to patients suffering from many forms of pain or disability. The cost of the current used per hour, at 6d. a unit, is said to be only ¼d., while the blankets are designed to reach a temperature of approximately 105° F. within the hour. A patent thermostat controls the temperature and makes overheating impossible, and the blankets are made to suit any voltage from 50 to 250 with adjustment.

CAMERON SURGICAL SPECIALITIES, LTD. (57C, New Cavendish-street, W.), exhibited complete medical and dental sets for diagnosis by transillumination of the nasal sinuses, the alveolar process, and the eye. An important exhibit was the Cauterodyne, a radio-frequency cautery indicated for use in carcinomatous conditions, where this method of operation is becoming increasingly popular, following on the experience of Harvey Cushing, Wyeth, and others.—THE DOMEN BELTS CO., LTD. (26, Sloane-street, S.W.), showed the latest models of their abdominal corsets and belts applicable to various conditions, hernial, post-operative, and traumatic. The firm also asked attention for a new bandage, the Poro-lastic, as particularly useful in cases of varicose veins and the conditions remaining after phlebitis or sprains.

Publications.

BAILLIÈRE, TINDALL AND COX (7–8, Henriett Street, W.C.) exhibited a representative collection their publications which included the 13th edition Rose and Carless's "Manual of Surgery," the 10 edition of Cabot's "Physical Diagnosis" and t 3rd edition of Eyre's "Bacteriological Technique Nicole's "Psychopathology" had a prominent pla on this stand.—WILLIAM HEINEMANN (Medical Book LTD. (99, Gt. Russell-street, W.C.), exhibited Jacob "Atlas of Dermochromes," with English text Dr. H. MacCormac, Souttar's "Radium and Surgical Applications," and other popular wor of medical interest.—JOHN WRIGHT AND SONS, LT (Bristol), the publishers of the "Medical Annual" a the *British Journal of Surgery*, called particul attention to a French "Index of Differential Dia nosis" and to Tidy's "Synopsis of Medicine."—H. LEWIS AND CO., LTD. (Gower-street and Gower-pla W.C.), the founders and organisers of the well-kno medical library, exhibited, together with an assortme of medical publications, the Lewis's Card Syst of book-keeping and case-taking, a system specia designed for the convenience of the practitioner.

The Exhibition was a success, a large number doctors attending, to learn the value and applicati of material aids to practice, placed at their dispo by applied chemistry and physics.

PUBLIC HEALTH SERVICES

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are 1929 statistics of three cities:—

Name of district and estimated (R.-G.) mid-year population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and neonatal mortality.	Young child (1–5 yr.) mortality.	Maternal mortality from childbirth.
Glasgow .. (1,074,881)	21·2	16·5	1·26	1·37	4·2	2·2	107/37	64	8·3
Sheffield .. (518,000)	15·4	13·2	0·95	1·40	3·1	1·8	88/39	44	6·6
Leeds .. .. (478,500)	15·5	16·5	1·30	1·43	4·2	2·6	97/42	74	4·4

Stillbirths per 100 live births: Glasgow, 4·8; Sheffield, 4·8; Leeds, 5·0.

Glasgow.

Dr. A. S. M. Macgregor looks forward with great interest to the census of 1931, as the accuracy of the 1921 census was open to question. The Registrar-General's estimate of Glasgow's population is 85,839 less than the local estimate and on the larger local estimate the birth-rate becomes 19·6, the death-rate 15·3, and the other rates per 1000 of the population are lowered in proportion.

Glasgow was one of the first cities to feel the influenza epidemic. In the closing days of December, 1928, influenza was rife among the crews and passengers of ships arriving from America, and the Glasgow epidemic began in the week ending Jan. 5th, 1929. Three weeks later the maximum mortality was reached of 53·4, and in another three weeks the epidemic was over. Concomitantly there was fog and cold weather. The deaths from pneumonia (2447) were higher than in any previous year. Hospital accommodation was strained to the utmost. At one time over 600 beds were occupied by pneumonia cases, of which about 60 per cent. were admitted. The prevalent type was a severe broncho-pneumonia. The voluntary hospitals and poor-law authorities a the district nursing association coöperated in ev possible way. The death-rates at the extremes f life were unusually heavy. The rates for the rema ing quarters of the year were noticeably low, a the measles epidemic, which occurred in the th quarter, was the mildest ever experienced, with comparative absence of pneumonia. It is poin out that the behaviour of pneumonia from year year is responsible more than any other single fac for the fluctuations in the general death-rate. Stud of the incidence of pneumonia reveal no tende to diminution and there are no clearly defin principles of prevention. Ready admission to hospi is the only feasible course, and better arrangement the existing hospital facilities is one of the import problems of the future. Detailed inquiry as to incidence and spread of respiratory diseases in selec areas is in progress, and also laboratory investigat of the types of organism concerned.

The rapid decline in pulmonary tuberculosis spite of the small and often overcrowded hou Dr. Macgregor finds it difficult to account f. Administration is being assisted by some unkno agency. There are two striking features in decline. The first is that no impression is being m on the incidence and severity of acute phth affecting young adults of either sex. The second a remarkable fall in phthisis at later years, m marked among women. These features have b clearly brought out by Dr. J. A. Wilson for an east area of the city with a population of 200,000 perso Non-pulmonary tuberculosis has declined even m rapidly. Since the first decade of the cent meningitis fatality has decreased to one-th abdominal tubercle to one-fifth, and other forms two-fifths of the former rates. The types of n pulmonary tubercle, especially glandular a abdominal disease, are less severe, and bone and jo affections show less tendency to rapid abscess for tion, whilst amyloid disease is now seldom encounter Dr. Macgregor thinks that the abolition of cripp from tuberculosis should be attained, now t the existing provision of 350 beds is increased to 0 beds by the recent opening of the Mearnskirk Hosp for children. Dr. Macgregor suggests that contracting sources of human infection have c tributed to this decline in non-pulmonary tuberculo

but that the pasteurisation of 80 to 90 per cent. of the city's milk may have had a part in the great fall in abdominal tuberculosis. He points out, however, that the sale of designated milks makes very slow headway. The daily sale of milk from tuberculin-tested herds only amounts to 1070 gallons and that of Grade A and pasteurised milk to 1115 gallons. He also cites the conclusion in the 1929 research monograph of the Ministry of Agriculture and Fisheries that the pasteurisation of milk at 145° F. for 30 minutes is not an absolute guarantee that the treated milk is free from the tubercle bacillus, in view of fluctuations in temperature, defects in the plant, and desire to conserve the cream line.

New houses were fewer than last year but have averaged 5500 for the past four years, thus making provi ion for a population of 90,000 during that period. Two-thirds of the houses now erected are three-roomed, and there is a corresponding reduction in larger houses. The "intermediate" municipal houses, with a controlled system of letting for the purpose of relieving overcrowding, are easing the situation, but overcrowding in one-roomed houses has apparently diminished very little since the war. Since 1923 improvement schemes involving 5110 houses have been completed. Another large scheme has been begun, involving a congested area of 22 acres with a population of 5151. The general death-rate in this area has been 22·5, as compared with 17·8 for the rest of the ward with the other mortality figures in proportion. New sites for rehousing within the inner or intermediate zones of the city are becoming scarce and there is a danger of over-building to the exclusion of playing spaces for the children. All dishoused families are offered a new house and about 75 per cent. accept the offer. Subsequently, about 10 per cent. either become weary of making an effort and return to the slums after a brief trial, or are evicted. Most of the remainder do exceptionally well and a definite system of supervision of tenants has been evolved. The benefit to the children by the removal is attested by the headmasters of the schools.

There has been much improvement in the industrial pollution of the air. At the beginning of the century the nuisances reported from 100 observations of chimneys were 17. The present figure is 1·25. The soot falling on the city is 30 per cent. less than in 1914. The classes for the instruction of firemen have been invaluable. Recent observations show that the soot falling on Sundays is 78 per cent. of the amounts falling from Monday to Friday, indicating that domestic smoke is the main factor in air pollution.

Sheffield.

Dr. John Rennie, who was tuberculosis officer and deputy medical officer of health, succeeded Dr. F. E. Wynne after the death of the latter last April, and submits the report for 1929. The birth-rate was the lowest ever recorded in Sheffield and 4·4 less than the average for the previous decade.

The influenza epidemic affected Sheffield less seriously than Glasgow or Leeds. The general death-rate was 1·0 higher than the average for the previous ten years. Of the 3389 notified cases of pneumonia, 318 were removed to the fever hospital. Mild scarlet fever was very prevalent The notifications were 4688. Over 71 per cent. were removed to hospital, where the average duration of stay was 35 days. The deaths numbered 23, a case-fatality of 0·5 per cent. Diphtheria cases numbered 760, of which 94 per cent. were removed to hospital. There were 34 deaths, giving a case-fatality of 4·5 per cent. There were 13 notifications of encephalitis and 12 deaths were registered, chiefly of cases, who contracted the disease in 1924, the year of the severe outbreak. Sheffield's death-rate from tuberculosis was less than that of any of the towns in England and Wales with populations exceeding 200,000, excepting Plymouth, Portsmouth, and Croydon; and was also less than that of England and Wales both for pulmonary and all tuberculosis. This favourable position is attributed to the coöperation of the general practitioners in the scheme, to the provision of adequate institutional accommodation, and to the discovery of early cases by the examination of contacts. The work of the surgical tuberculosis officer, Dr. C. Lee Pattison, and of King Edward VII. Sanatorium has also had a noteworthy effect in securing the early treatment of non-pulmonary tuberculosis. The percentage of deaths amongst grinders from tuberculosis of the lungs has not decreased during the last 44 years. The scheme for rehousing infectious cases of tuberculosis began in 1928. Altogether 59 families have been rehoused under this scheme. Seven of the tenancies terminated after the death of the patient or for other reasons. On Dec. 31st there were 52 families in the scheme. All the members of these families are examined at the dispensary and their homes are visited by the health visitors. The improvement in the health of the families, particularly of the children, the air of well-being and optimism, the cleanliness of the homes, and the brightness of the gardens have been striking features to visitors.

The Joint Smoke Abatement Committee has been extended to include all the neighbouring local authorities except Wortley Rural District Council. An advisory committee, including manufacturers, is carrying out research with a view to lessening the smoke from metallurgical furnaces. The privy conversion scheme has now been completed, and steps are being taken to substitute ordinary w.c.'s for trough-closets and waste water-closets, and to secure the provision of a separate sanitary bin for every house.

Leeds.

Dr. J. Johnstone Jervis reports that the birth-rate was the lowest ever recorded, and that owing to the influenza epidemic in the first quarter, the death-rate was the highest since 1918, and 3·3 above the average of the previous five years. The infantile mortality-rate also shared in the rise, and there were 70 more infant deaths from pneumonia, 13 more from measles, and 15 more from whooping-cough than in the previous year.

The death-rate from influenza and respiratory diseases was 11·99 in the first quarter, as compared with 1·7 for the remaining nine months of the year. The peak week for the influenza epidemic was that ending Feb. 3rd. Scarlet fever of a mild type was also prevalent. There were 3473 cases, of which 3035 were removed to hospital. The deaths numbered 29. Notifications of measles numbered 10,742, and deaths 102. Whooping-cough was also more prevalent and caused 107 deaths.

Regret is expressed that no progress has been made with hospital provision for orthopædic conditions, including surgical tuberculosis. The present position, Dr. Jervis says, is most unsatisfactory and calls urgently for attention. Another unsuccessful attempt has been made to unify the school medical and public health services. Fatal street accidents from motor vehicles were 48 as compared with 53 in the previous year, and the chief constable reports that the installation of automatic signals at crossings has considerably increased the safety of the streets. The notifications of diphtheria were 536 with a case-fatality of 4·8 per cent. Parents have availed themselves but little of the immunisation facilities provided for their children. An unusual outbreak of seven cases of diphtheria among the nurses at the Infants Hospital occurred. The infecting case was a nurse, who resumed duty after convalescence from faucial diphtheria and was afterwards found to have an area of intertrigo behind the ear, which harboured the diphtheria bacillus.

Among the 2975 dairy cows stalled in the city veterinary inspection detected 8 with tubercle of the udder and 6 with generalised tuberculosis. Altogether, including notifications from owners, 33 animals were slaughtered under the Order. The city analyst's report gives instances of cheese becoming contaminated with tin from the foil in which it is

wrapped, and an internal wrapping of grease-proof paper is suggested.

Attention is drawn to many needs in environmental sanitation. Sanitary bins should be substituted for many thousand ash-pits. The common lodging-houses are by no means satisfactory. During the year 49 underground rooms used as dwellings were discovered and 6 cellar dwellings. For all but two alternative accommodation was found. The underground workplaces numbered 341, and include 42 used as offices. Dr. Jervis emphasises the need for legislation to secure better accommodation for office workers. It is ten years since the survey of slum areas was made, but only one small area of 49 houses has been cleared and another partially cleared. There is an alarming increase in houses let-in-lodgings for which, says Dr. Jervis, registration is a purely optional matter. The 7066 municipal houses erected since the war include 524 cottage flats, let at an inclusive rental of 8*s*. to 9*s*., for which there is a great demand. Unfortunately these are on the outskirts and do not provide for slum tenants unable to pay the cost of transport to their work. For such, Dr. Jervis suggests the continental system of large blocks, round open squares with heating, laundry, and other services in common, in the central area of the city.

MENTAL HOSPITAL REPORTS.

The DORSET MENTAL HOSPITAL had 927 patients in residence at the end of last year. The recovery-rate was 36·18 per cent. and the death-rate 7·58 per cent. The general health of the patients was good and there was no infectious disease except a spring epidemic of influenza, which brought with it 20 fatal cases of broncho-pneumonia. The dentist visited fortnightly and treated 210 patients. The laboratory carried out 2382 routine examinations, including a search for typhoid carriers and a systematic examination of the fæces of all patients; four new carriers were discovered and eight carriers of dysentery. The Meinicker micro-reaction for syphilis has been investigated and is to be used as a routine in future, keeping the more complicated Wassermann for confirmation. The hospital records were searched to see if there was any ground for the statement that gall-stones are more common in the insane than in the general population. This was found to be true for patients under 40 years of age, young epileptics being specially liable to cholelithiasis. A leucocyte study has been continued, and Buscaino's black reaction was carried out on all urines. Six general paralytics were treated with tryparsamide, with satisfactory results. The out-patient clinic at Dorchester was held weekly. On the poultry farm an interesting attempt was made to eradicate carriers of bacillary white diarrhœa by means of the agglutination blood test. When once an outbreak of this infection occurs the death-rate is 75 per cent. and about half the survivors become carriers and pass on the disease to their offspring. The farm is to be congratulated, therefore, on collecting 135 doubly tested birds, from which some 1500 healthy chicks have been hatched. As in the past, much attention was given to occupational therapy, and plans for a handicraft room have been approved. A large number of patients were allowed out on trial and on parole. Two female nurses work on the male side and 35 attendants and 19 nurses are certificated or registered.

The CITY OF CARDIFF MENTAL HOSPITAL had 705 resident patients on the first day of this year. The recovery-rate was 44·3 per cent. and more than half of the patients discharged were in residence less than six months—just under a third of them less than three months—so that under the new Act they would escape certification. The general health was good; there was no dysentery and only four cases of tuberlosis and two of erysipelas. The death-rate was 9·12 per cent. New women patients underwent a routine gynæcological examination as part of a piece of research which will be published shortly. All suitable cases had routine examinations of the ear, nose, and throat, and the dental surgeon examined 572 patients. The consulting surgeon performed three major operations. The result of this specialist work is the conclusion that removal of focal sepsis does not necessarily improve the mental state, but that all such lesions should be carefully sought for. In the biochemical laboratory an attempt has been made to study changes in carbohydrate metabolism in psychotics. Results indicate the close relationship between hyperglycæmia (after glucose ingestion) and emotional tension. The oxidative processes in the brain and the relationship between structural intactness and physiological activity in the living cell are being studied. Other subjects under consideration are enzyme action, hæmolytic *B. coli*, and the general relationship between toxæmia and the psychoses. Filter-passing organisms are being sought in schizophrenics, but have not yet been found. The value of artificial sunlight in manic-depressive and toxic-exhaustive psychoses has been studied. The X ray department has served 60 cases, and a large number of routine examinations have been made in the laboratory. General paralysis is treated by malaria and tryparsamide combined. Electrical treatment, massage, continuous baths, and physical drill are provided for suitable cases. Between 60 and 70 per cent. of the patients are kept occupied, and an occupations officer has been appointed. The out-patient clinic at the Cardiff Royal Infirmary is held weekly, and 125 new cases were seen during 1929. A canteen has been started in the hospital, and is so much appreciated that the profits have supplied three new loud-speakers, 14 new gramophones, and 15 dozen records. Parole is granted to 69 men and 94 women, 32 of them into the town. All ground floor wards have open doors and as much freedom is given as possible. A clinical room has been equipped in each ward. The nurses enter for the State examination; during the year four took their final certificate.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 25TH, 1930.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 86 (last week 125); scarlet fever, 2080; diphtheria, 1511; enteric fever, 51; pneumonia, 743; puerperal fever, 55; puerperal pyrexia, 83; cerebro-spinal fever, 10; acute poliomyelitis, 21; acute polio-encephalitis, 2; encephalitis lethargica, 13; dysentery, 9; ophthalmia neonatorum, 79. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Oct. 28th–29th was as follows:—Small-pox, 172 under treatment (last week 154 and 3 under observation); scarlet fever, 1769; diphtheria, 2118; enteric fever, 19; measles, 87; whooping-cough, 112; puerperal fever, 17 (plus 5 babies); encephalitis lethargica, 121; "other diseases," 46. At St. Margaret's Hospital there were 14 babies (plus 4 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox or enteric fever, 14 (1) from measles, 3 (0) from scarlet fever, 8 (0) from whooping-cough, 25 (6) from diphtheria, 54 (11) from diarrhœa and enteritis under two years, and 42 (8) from influenza. The figures in parentheses are those for London itself.

Hull reported 4 deaths from measles, York 3, and Liverpool 2. Two fatal cases of diphtheria occurred at West Ham and at Swansea. Diarrhœa accounted for 7 deaths at Liverpool, 5 at Birmingham, 2 at Leeds, and 2 each at Manchester, Huddersfield, and South Shields.

The number of stillbirths notified during the week was 254 (corresponding to a rate of 39 per 1000 births), including 46 in London.

CORRESPONDENCE

A CHRISTMAS APPEAL.

To the Editor of THE LANCET.

SIR,—Next month we shall be preparing to give, as is our usual custom, a Christmas gift of 30*s*. to each of our annuitants and to the most necessitous of the grantees. These gifts are looked forward to by many. Some of the regular recipients are blind, others are deaf, and many of them are old and infirm. All are facing the hardships of poverty. Each year the number on our books increases and we need no less a sum than £550 this year if no one is to be left out. I bring this request before your readers in plenty of time before Christmas, because we urgently need money. Where a large donation cannot be given I would ask them not to disregard my appeal, but to send any sum, however small, to the Treasurer, Royal Medical Benevolent Fund, 11, Chandos-street, Cavendish-square, London, W. 1.

I am, Sir, yours faithfully,

THOMAS BARLOW,
President, R.M.B.F.

Nov. 5th, 1930.

CRITICISM OF THE GENERAL PRACTITIONER SERVICE.

To the Editor of THE LANCET.

SIR,—Dr. H. G. Dain, in your report of the recent annual panel conference (THE LANCET, Nov. 1st, p. 972), is recorded as saying, during some remarks upon the increase of sick benefit and the adverse criticism of such increase by the National Conference of Friendly Societies: "it was unfortunate that such people as Dr. Graham Little and Lord Riddell should make statements without actual basis in fact. The service given to the panel patient was the best type of general practitioner medical service in the world." I am entirely at a loss to understand Dr. Dain's reference to me in such a connexion, and I must ask him to specify statements made by me "without basis in fact." In an article which I contributed to the *Edinburgh Review* in January, 1929, discussing the National Health Insurance Act, I wrote:

"The majority of medical men in this country are engaged in the medical service of the panel. The general practitioner is in fact the panel practitioner. The qualifications, competence and status of the general practitioner have improved enormously in our own time, more especially during the 17 years which have elapsed since the Insurance Act came into being. There is no better general practitioner in the world than the British general practitioner, and no criticism could be directed against his capacity to deal properly with insured persons if that capacity were not in fact restrained and hampered by bureaucratic regulations and by difficulties inherent in the circumstances of the Act . . ."

My criticism of the Act, then and subsequently, has been chiefly directed to its administrative, not to its medical defects. In two recent addresses to general practitioners (the Paddington Medical Society, on Sept. 9th, and the Guildford Division of the British Medical Association, on Oct. 9th, reported in the *Medical Press and Circular* of Sept. 17th and Oct. 22nd respectively) I deprecated the proposal of the Council of the British Medical Association to ask for an extension of the National Health Insurance Act to dependants, my objection being grounded on (1) the menace to private practice which a universal panel practice would imply, and (2) the encouragement which such a request, made at the present moment by the medical profession, would give to that political party which ardently desires to establish a State medical service. I pointed out, also, that a more inopportune time for preferring this request could hardly have been chosen, in view of the chorus of dissatisfaction with the present conditions of national health insurance, as recently voiced by bodies so representative of the insured population as the Trades Union Congress and the National Conference of Friendly Societies.

I submit, Sir, that if the profession is going, as the B.M.A. Council wishes it to do, to ask for an extension of national health insurance, which it would cost at least ten million pounds a year to provide, it is not unimportant to ascertain whether those for whom it is to be provided, and who must find the money, really desire that provision. Neither the B.M.A. Council nor the panel conference is in a position to force these proposals upon the nation if the nation is unwilling to accept them. The tone of the comments made at the panel conference on the reprehensible dislike that is shown by insured persons for some of the conditions of the service now provided reminds me of a similar attitude adopted by the celebrated Prussian historian, Prof. Delbruck. In a conversation with him at dinner in the year 1913, discussing different conceptions of colonial government, I mentioned that I knew of many German settlers who had migrated from German South-West Africa to British South Africa because they did not like the military rule exercised in the German colonies. Delbruck was very angry. "I know that," he said, "but it is for the good of the Fatherland that Germans remain in German territory and" (here he thumped the table) "they *shall* like it." The chairman of the B.M.A. Council and the chairman of the Insurance Acts Committee treated the recent conference like the mere puppet of the Association, which it has, in fact, become. As a prominent member of the conference quite correctly put it: the conference has come to regard the Insurance Acts Committee of the B.M.A. as the "executive" of the conference, and the Insurance Acts Committee, in turn, is ruled by the B.M.A. Council. Small wonder, therefore, in these circumstances that the conference says ditto to the council. The voice is the voice of Jacob, but the hands are the hands of Esau and, like Esau, the B.M.A. Council is selling the doctor's birthright, his professional independence, for a mess of pottage. But if the B.M.A. Council, when it approaches Parliament for an addition to the estimates of ten million sterling a year, is going to maintain the Prussian mood of meeting criticism displayed by the conference under its tutelage, we who deprecate the imposition of universal panel practice can sleep in our beds.

I am, Sir, yours faithfully,

E. GRAHAM LITTLE.

House of Commons, Nov. 3rd, 1930.

HÆMATOPOIETIC PROPERTIES OF DRIED MILK.

To the Editor of THE LANCET.

SIR,—In his unstinted and exclusive praise to the American investigators on this subject (THE LANCET, Nov. 1st, p. 957), Mr. A. L. Bacharach has done an injustice to the brilliant work of a British scientist. An investigation occupying a period of over two years on over 500 babies was carried out by Dr. Helen Mackay [1] on the same problem, and with far more

[1] Arch. Dis. Children, 1928, iii., 117.

practical and definite results. The complete omission of any reference to this pioneer work is unfortunate. A consideration of the results of the former investigation which was carried out not on babies but on five albino rats would seem to indicate that the medicated dried milk used was deficient in some way, as growth was not as good as on liquid milk. Further, it would also appear to be indicated that the dose of iron salt (name not mentioned) was low, inasmuch as the hæmoglobin percentage dropped consistently after the third week. In Dr. Mackay's research both growth and hæmoglobin percentage were maintained high. I am, Sir, yours faithfully,

Grosvenor-street, W., Nov. 3rd. HAROLD TAYLOR.

CHRONIC NASAL SINUSITIS.

To the Editor of THE LANCET.

SIR,—While appreciating your full review of my recently published monograph on "Chronic Nasal Sinusitis and Its Relation to General Medicine," I propose to comment on the statement that the author "reports cases of this disease (nasal sinusitis) which have recovered after exploring the sphenoidal sinus, a circumstance by now very well known, but does not explain that many cases recover either spontaneously, or after removal of part of a middle turbinal. It is thus possible . . . that a particular patient would have recovered without any intervention. This criticism may be extended to the chapters on other regions. . . ."

Maybe one must not expect the reviewer to read every page of the book he reviews, but, at any rate, on one point my teaching is the converse of what your reviewer criticises. Indeed, not once, but over and over again the importance of recognising the tendency to spontaneous recovery is stressed, as for example, in the following paragraphs :—

"We have already emphasised the frequent tendency to spontaneous recovery from sinus infections and their secondary infections, although this applies much more to the acute than to the chronic infections. And the problem that must ever recur is when to rely on this tendency to recovery, and when to operate, for while unnecessary interference is to be discouraged, ill-judged expectancy may be fraught with very grave consequences" (p. 171).

"As regards retinal and other ocular metastases, Sir John Parsons notes the strong tendency for endogenous bacterial metastases to undergo spontaneous resolution" (p. 46).

"Fortunately there is such a proclivity to spontaneous resolution of the low-grade metastasis that the persistent activity in the primary source of infection almost appears essential; (1) To the initial penetration of the organisms slowly traversing the lymph channels . . . ; (2) To the maintenance of a once formed metastasis, be it . . . retinal, &c." (p. 46).

Again, having cited cases of optic neuritis proved to have been due to sphenoidal sinus infection, and illustrated sections showing the actual organisms of sepsis in an optic nerve sheath, one continues :—

"But it must not be inferred that such conditions are always consequent on focal sepsis," &c. (p. 104).

"The co-existence of nasal disease with orbital ocular disease which might be rhinogenous does not of necessity prove any causal relationship, for it is always possible to have long standing and extensive nasal accessory sinus suppuration side by side with even the severer type of orbital infective inflammations, and yet the infection of the two regions may be due to quite independent sources of infection" (p. 100).

"In some cases the primary source of ocular infection is far removed from the head, perhaps in the gall-bladder or in the large intestine" (p. 102).

Your reviewer complains that I omitted to state that "cases of sphenoidal sinusitis recover after removal of part of the middle turbinal. It is thus possible that the local blood-letting acts beneficially."

I am glad that no such suggestion finds support in my book, but on p. 106 attention certainly was drawn to experiences related more than 30 years ago :—

"e.g. H. M. Fish, referring to retrobulbar neuritis emphasised the fact that he had had several cases in which, although there was no nasal discharge, and the nasal examination was absolutely negative save for a slight hyperæmia, he had relieved the ocular symptoms by simply draining the sinus" (p. 106).

The need for precise diagnosis led me to devise, more than 30 years ago, the methods I advocate, to prove which sinus is infected and to drain and disinfect it, instead of merely doing just something in the way of blood-letting, particularly on an inoffensive middle turbinal; for such crude procedures should be discouraged.

I am, Sir, yours faithfully,

Clifton, Bristol, Nov. 3rd. P. WATSON-WILLIAMS.

A MEDICAL SERVICE FOR THE NATION.

To the Editor of THE LANCET.

SIR,—In answer to Dr. Bodman, I maintain that it can be maintained that at birth all are equal. Not, of course, meaning that every human animal is identical at birth, but that every Englishman comes from equally good stock and stands the same chance of having had a good ancestry, whatever the financial position or social status of his immediate forbears may have been.

We cannot argue from a single individual; in the study of heredity we must consider large numbers over periods of time. Take, for instance, the Londoner. For many years Sir Arthur Keith tried to find a Londoner to the third generation; that is one born in London, his two parents and his four grandparents. I took up the search. I inquired all over London, among friends and acquaintances, from patients, both in private and hospital practice. I thought I had found some at the tip of the Isle of Dogs when called to see an old lady of 70 who was still living in the cottage in which she was born, but no! Of her grandchildren one grandparent was a peasant up from the country. After four years I found at Clapham the child of a gas-fitter and at Balham two daughters of an engineer who came in Sir Arthur's category. All the rest gave the same history, someone of yeoman or peasant stock up from the country in the last or previous generation. Take again the county families. Family trees consider the male, and only just mention the woman. Yet for our purpose she is as important, and in every alternate generation different blood is brought into the old stock thereby. Among the titled nobility the change of blood is a constant theme of Disraeli in his novels :

"In a commercial country like England, every half century develops some new and vast source of public wealth, which brings into national notice a new and powerful class. A couple of centuries ago, a Turkey Merchant was the great creator of wealth; the West Indian Planter followed him. In the middle of the last century appeared the Nabob. These characters in their zenith in turn merged in the land and became English aristocrats; . . . The expenditure of the revolutionary war produced the Loanmonger . . . and the application of Science to industry developed the Manufacturer, who in turn aspires to be 'large acred.'" ("Sybil," Bk. II., Chap. 7.)

No one can say that this process has diminished in the 85 years since "Sybil" was written. Just as we of the professional classes are constantly moving into "the nobility and gentry" so we are constantly interchanging with the "worker." If we go into it we find that a grandmother was a dairymaid and that the coal-merchant great-grandfather began as a waterman when the Thames was still a highway.

A couple of years ago I dipped into the biography of a peer who though the first of the title had four surnames. He boasted of his descent from Charlemagne and thought that one who had this blood in his veins was better fitted to rule the nation than those who had not. So I took out a pencil and on jotting it up thought that in all probability I, too, had the blood of Charlemagne in my veins. By allowing four generations to the century I found I had 3,747,774,640,448 ancestors when he was crowned. Allowing for the same ancestor cropping up twice quite a number of times it would still leave them as numerous as the population of Western Europe on that day. But in heredity what are 41 generations? We have to go back, not to the time of Charlemagne, but to that of the Long-Barrow and the Beaker folk and to consider all the migrations of peoples into our islands since those times. The factors of heredity may "influence very largely the potentialities for disease"; but they do so equally throughout the nation.

When I made the statement that at birth all are equal, I was referring to the physical characteristics, but I will accept Dr. Frank Bodman's challenge and include the mental ones. Of moral ones he will probably agree with me that we have no data upon which to study hereditary factors uninfluenced by the disadvantages either of great wealth or of extreme poverty and the other environmental factors that must influence all before character is developed. There is no reason to suppose that more are born "with fewer neurones than the normal baby" from any one group of the community than from any other; whether you subdivide this community into the upper and the middle and the lower classes, or whether you divide them into the rich, the comfortable, and the poor. Nor are there any statistics to show that there is more mental disease among one of the groups beyond such as can be accounted for by greater stresses causing the mentally unstable to topple over into disease. We see the same with the physical characteristics, whether one is delivering the child of a Yorkshire peasant or the babe of a tuberculous mother in a Bermondsey backyard, they are the same children; and they are the same as those that are born to middle-class parents or in the ancestral home. We hardly realise how soon the effect of environment acts upon this babe. A few days' loss of weight may not matter, but a few weeks of different fare does, and by the end of two years the damage is done. Any one can recognise in adult life the poor teeth of which the crowns were laid down in these two years. Biochemistry has not yet advanced enough to recognise similar differences in the other tissues laid down in the same period. Yet we have every reason to believe they exist in these as well as in the rickety bone that becomes again absorbed.

There is no question of "sentimental consideration"; a proper answer to this question of physical quality at birth is a basis of all our work—hospital work, social-service work, antenatal clinics, care committees, school clinics, all the advances in sanitation and hygiene of the last century, housing, town planning. To a large extent they all depend upon it. If the answer is in the negative much money is thrown away; but the answer is not in the negative. From the experience of 25 years in medicine I do not believe that there is "taking place a relative increase of physically and mentally inferior people." I see no sign of deterioration among the well-to-do, and among the poor I see a very great improvement upon their condition from that I remember when I first became a medical student. There is still a great difference between the two: I repeat that it is the function of the State to eliminate the factors that make this difference. I base our justification for this on the fact that at birth we all are equal, in the sense which I have defined above and which was inherent in the context when I made the statement previously.

I am, Sir, yours faithfully,

Queen Anne-street, W., Nov. 3rd. T. B. LAYTON.

A RUSSIAN CANCER INQUIRY.

To the Editor of THE LANCET.

SIR,—In the interest of science I beg you to insert an appeal to my medical colleagues in your country whose addresses it is impossible for me to determine.

I am, Sir, yours faithfully,

Prof. Dr. N. I. KOUCHTALOFF,
Director of the Obstetric and Gynæcological Clinic at the Medical Institute of Astrakhan, U.R.S.S.

The appeal is as follows:—Having been invited by the organisation committee of the Ninth Pan-Russian Congress of Gynæcologists and Obstetricians, which will take place in Moscow in September next, to deal with the medical treatment of inoperable cancer of the uterus, I should be glad, in order to clear up the question as far as possible, to learn your experience on the subject. The campaign against cancer takes on more and more a world-wide aspect. All the medical sciences are called to coöperate in the study of tumours to which humanity still pays so vast a tribute in spite of the application of chemistry, physics, cytology, and clinical surgery. I beg you, therefore, to fill in this inquiry form.

QUESTIONAIRE.

1. Name of establishment, hospital, or institute.
2. Methods of treatment of inoperable cancers (surgical, chemical, physical, biological, &c.).
3. Their effects and results.
4. Medical treatment.

Date.	Serial No.	Age.	Microscopic diagnosis.

Substance employed.	Method of application.	Results.	
		Immediate.	Ultimate.

5. Your opinion.

The replies will be published over the names of their authors.

LAXATIVES AND COLITIS.

To the Editor of THE LANCET.

SIR,—It would appear from Dr. Spriggs's letter that I have too closely identified him with the prevalent view that paraffin is the drug par excellence in conditions of intestinal stasis, and I must offer him an apology. The experiments (2426 and 2731) quoted by Dr. Spriggs support the view that liquid paraffin, in small and medium doses, does not cause wasting. Experimental evidence of this nature is more cogent than microscopical demonstration that the paraffin in fæces is distributed as an emulsion and

not as a film, with the inference that the digestion of foodstuffs is not interfered with in this way. Parenthetically, one might point out that the quantities of paraffin administered in these experiments—1 oz. daily in No. 2426, and ½ oz. daily (in the form of jelly) in No. 2731—have often to be exceeded in practice; it would be interesting to learn the results obtained in similar experiments on the absorption of foodstuffs when larger quantities of paraffin are used which, as the references quoted by Dr. Spriggs indicate, lead to film formation.

After repeated trials and failures one wonders how often diet and exercise, without drug help, really do correct constipation. I feel certain that the general experience of practitioners in this regard cannot be a rosy one. The observance of a daily effort at defæcation at a fixed time can be religiously carried out, but the "skeletal muscles and nervous reflexes employed in defæcation" (I quote Dr. Spriggs) refuse to respond. The general view of the laxative action of paraffin appears to be that it acts purely as a lubricant. Experience makes one question this. It is probable that every laxative bears a general resemblance to every other laxative in that it acts by stimulation of the structures of the bowel wall and, on the other hand, varies from all other laxatives in possessing a peculiar mode of stimulation, and I believe that paraffin acts similarly. If paraffin were to act through lubrication the film theory would need to be assumed, and this has been disproved by the experiments quoted by Dr. Spriggs. If, on the other hand, it becomes emulsified in the fæces and causes them to hold more water than normally it would appear to act by reflex stimulation of the bowel wall by a bulky residue, and it is probable that it stimulates the bowel wall in other ways.

There is, then, no a priori reason why paraffin should replace other laxatives, as all laxatives act through stimulation. I have met with one or two patients who have complained of abdominal soreness after the use of paraffin, and I have found tenderness along the course of the colon, which I have concluded was due to irritation by paraffin.

I am, Sir, yours faithfully,

South Tottenham, N., Nov. 1st. L. J. GREEN.

TOXICITY OF VITAMIN D.

To the Editor of THE LANCET.

SIR,—We have read with great interest Dr. Duguid's article last week (p. 983) on this subject, which is all that a survey should be. There is now no doubt that very large doses of irradiated ergosterol may have definitely toxic effects on experimental animals receiving certain kinds of artificial diet. Windaus, indeed, uses the minimum lethal dose for mice, as well as the antirachitic dose for rats, to control various experimental irradiation products. It is of interest to note that the former is from 5000 to 10,000 the latter, in spite of the size of the mouse, which is smaller and presumably correspondingly more sensitive than the rat. This enormous gap between therapeutic and toxic dose—far greater, for example, than with the alkaloids—gives clinicians an ample margin of safety, as Dr. Duguid points out. It does not, however, remove the necessity for physiological standardisation of the vitamin D in all medicinal products containing it.

Manufacturers in this country to-day without exception realise this necessity. We ourselves, although first concerned with the preparation and distribution of a vitamin D concentrate as long ago as 1924, realised the necessity from the beginning, and in our own laboratories more than 5000 physiological assays of vitamin D have been carried out during the past six years. Until recently, however, we were compelled, as were the American firms to whom Dr. Duguid refers, to speak in terms of cod-liver oil. This was by no means satisfactory, for, as one of us has previously shown in your correspondence columns,[1] the variation in vitamin D content of cod-liver oils is very great.

Following the recent report of the Committee on Accessory Food Factors it will certainly not be long before all preparations produced by reputable firms will be described in terms of this unit. A short time must, however, elapse for the checking up of existing units and standards against the official preparations. When this measure of coördination has been achieved, the "authoritative pronouncement on the proper dosage for therapeutic purposes," for which Dr. Duguid so rightly asks, will, we hope, occupy the attention of the Medical Research Council.

We are, Sir, yours faithfully,

H. JEPHCOTT,
Director,
A. L. BACHARACH,
Glaxo Research Laboratory, N.W. 1. Chief Chemist.

CIRRHOSIS FROM MANGANESE.

To the Editor of THE LANCET.

SIR,—Dr. G. M. Findlay draws our attention to the fact that he described the experimental production of liver cirrhosis by manganese salts in the *Brit. Jour. Exp. Path.* (1924, v., 92) some years before the Hursts, to whom we ignorantly (p. 959 in your last issue) attributed the discovery. We apologise.

We are, Sir, yours faithfully,

A. E. BOYCOTT,
G. R. CAMERON.

University College Hospital Medical School, Gower-street, W.C., Nov. 3rd, 1930.

THE MEDICAL REGISTER.

To the Editor of THE LANCET.

SIR,—I desire to remind registered medical practitioners that if they desire to have a new address entered in the forthcoming Medical Register they should communicate with me without delay. I should also like to take the opportunity of pointing out that the Medical Register is the statutory publication. It is the appearance of a name in this book alone which makes a practitioner legally qualified, and it should not be confused with other books of a similar nature which are purely private publications.

I am, Sir, yours faithfully,

NORMAN C. KING,
Registrar, General Medical Council.

44, Hallam-street, Portland-place, W., Nov. 4th, 1930.

[1] Jephcott, H., THE LANCET, 1928, i., 261.

STANDARDS FOR JAM.—As from the beginning of November the jam manufacturers are setting up a standard for their products, which will be classified as either of first or second quality, and will be conspicuously labelled either "full fruit standard" or "lower fruit standard." The initiative has been taken by the manufacturers themselves. In the case of mixed jams the fruit named first on the label will be present in greater proportion, thus "plum and apple" will contain more plum than apple.

PANEL AND CONTRACT PRACTICE

Efficient Rural Service.

THE opinion has been recently and repeatedly expressed that the results of National Health Insurance practice are more satisfactory in the country than in the towns.

"If this is the case," writes Rural Panel, "it might be worth while, at a time when a large extension of insurance work seems to be contemplated, to look more closely into the matter. There are certain special features common to all medical practice in rural districts as opposed to that in towns. First, the population is always a socially and financially 'mixed' one. They are not all rich or all poor. Secondly, the population is more stable; houses are not constantly changing tenants and a far higher proportion of people live and die in one place. Thirdly, country people are notoriously of a more conservative nature than townsfolk; their ideas change less quickly. Fourthly, large hospitals and consultants are much more difficult of access. Fifthly, there is the obvious fact that the distance between patient and doctor is greater.

"How do these considerations affect panel practice? In the first place a socially mixed population ensures that all rural practitioners must be 'on the panel.' Thus, there can be no 'inferior' class of doctor who only attends the poor, and the labourer knows that his own doctor may be going on to see the Lord of the Manor next on his list. This naturally increases his respect and also reacts on the doctor, who is kept up to scratch by having educated patients to deal with as well as the slower witted labouring classes.

"A stable population has obvious advantages from the medical point of view. It means that the phrase 'family doctor' really has some significance and is not a mere synonym for 'medical shop-walker.' There is a much greater chance of patients becoming friends of the doctor as well as patients, and it cannot be a disadvantage for a patient to be able to say 'I've known Dr. So-and-so for 30 years and I have every confidence in him because he knows my constitution.' Again it is only in human nature that a doctor who knows that if he sets old John's leg badly he will see him limping past his window every day for the rest of his life will take more trouble to obtain a good result than if he is merely one of a crowd or a number on a card.

"The conservative nature of the rural mind shows itself in many ways, most of which tend to improve the relations of doctor and patient. The word 'Sir,' and what is now called an old-world politeness, may mean nothing, may even be a sign of a regrettable lack of education in class-consciousness in a backward proletariat, but they certainly grease the wheels of intercourse and increase the amenities of life. A horror of chopping and changing makes the country-man very loath to change his doctor—always a regrettable occurrence—nor does he lightly follow after false gods in the shape of the latest 'discovery' of the popular press, nor pester his doctor to procure him their images to worship. Care, kindliness, and skill impress him more than an array of 'gadgets.'

"The comparative inaccessibility of consultants and large hospitals may be detrimental to the patient, but it is, undoubtedly, good for the country panel doctor. It makes him self-reliant and resourceful; forces him into a working knowledge of every branch of his subject and gives him a pride in his cottage hospital and the work it can do. A man who had not been a success in a country village was asked by a colleague why he was going to London. His reply was that in town if you didn't know what was wrong with a patient he could always be sent into hospital.

"Lastly, the greater distance which the doctor has to travel to see his patient is realised by the great majority of the patients and results, on the whole, in a diminution of unnecessary calls. There is, of course, a higher ratio of visits to cases seen in the surgery than in the towns, but while this may increase the doctor's working hours it means that surgeries are less crowded and there is less tendency to do bad work. It is also, perhaps, not too much to suggest that the quiet interval occupied in driving from one case to another may give the doctor leisure to consider each case a little more thoroughly. Again, the mileage allowance, inadequate though it still is, is to some extent a compensation, whereas the minimum fee paid by a poor private patient is often all the practitioner can expect for a ten-mile drive.

"There is, of course, the reverse of the medal. The telephone allows large householders to summon medical aid for their domestics at any hour and for any cause, reasonable or unreasonable, nor dare the doctor charge for such a visit even when requested to do so by the householder. Should maid and mistress subsequently fall out, he may find himself 'court martialled' under a grave charge. A stable population means that one person with an unjust grievance may turn a whole village against the doctor. The conservative mental outlook means that a greater amount of time must be spent in explaining the why and how of treatment: a country doctor who doesn't give 'a bottle of medicine' would lose his practice in very quick time. Finally, the routine—and often unnecessary—visits laid down by the authorities for certificate-giving purposes press very hardly when each involves a 20-minute journey by car.

"Still, taken as a whole, the above considerations seem to show that the special features inherent in country medical practice tend to improve the panel service as compared to the conditions in urban areas. It must not be forgotten that the points of view of the doctor and of the patient are not opposing ones, but are essentially similar. The aim of any scheme of medical service must be to secure efficient medical attention for its members, and thus it must not, on the one hand, make the lives of the many devoted and efficient doctors unbearable by placing them under intolerable conditions, either of too great dependence on their patients' whims, of inadequate financial rewards, or of the impossibility to do good work, nor, on the other hand, must it fail to safeguard its patients from the small minority of doctors who may be careless or inefficient.

"At present," it seems to Rural Panel, "this aim has been achieved by National Health Insurance practice in the country districts at least."

Uninformed Criticism of Insurance Practice.

In our report last week (p. 972) of the panel conference under the heading of "A Direct Attack" we recorded briefly a refutation of the misleading and exaggerated statements about insurance practitioners made at the autumn conferences of friendly societies and trade unions. We are glad to reproduce

the full text of the remarks of the chairman of the Insurance Acts Committee as given in the *British Medical Journal*. During this autumn session of conferences relating to national health insurance there appeared to have been, said Dr. Dain, a larger amount of virulent abuse poured out upon the insurance practitioner than had fallen to his lot for a good many years. It was perfectly easy for the president of the National Conference of Friendly Societies to get up and make statements when he knew there was no doctor present to challenge them, and thus these statements got a start. It appeared that the matter which had hurt the friendly societies most was the increase in sickness claims, and as they must have a scapegoat, they had fixed upon the doctor, and had drawn the most absurd conclusions from the figures presented to them. He wanted to put it to the conference that these were false deductions. Last year there were 410,000 cases referred on the ground of incapacity; the number actually examined was 211,000, and apparently the assumption was made that the rest—nearly 200,000—were people who had been improperly certified. That, of course, was an absurd assumption. It had always to be remembered that in the interval between the insurance practitioner's examination and the examination by the regional medical officer the patient in a very large number of cases was becoming increasingly fit for work. Of the 211,000 examined, only 67,000—or 16 per cent. of the total number referred—were found to be not incapable of work. The doctor's diagnosis was only reversed in 16 per cent. of cases, although the factor of time was always operating, so that these people were getting nearer and nearer to the time when they would be well. He believed that if an actuary examined the figures he would find that the number of people returned to work on account of the action of the regional medical officer who would not have been returned to work but for him was a very small number indeed.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

Private Members' Bills.

AMONG the notices of presentation of private members' Bills, given in the House of Commons on Oct. 31st, were the following:—Dr. ETHEL BENTHAM—Bill to amend the law relating to the nationality of women; Mr. LLEWELLYN-JONES—Bill to grant complete or partial relief from rates in the case of certain hereditaments used for the purpose of hospitals, infirmaries, dispensaries, convalescent homes, nursing homes, sanatoria, and other similar uses, or in connexion therewith; Dr. VERNON DAVIES—Bill to amend the law with respect to regulation of advertisements.

HOUSE OF COMMONS.

THURSDAY, OCT. 30TH.

Health in the Baking Industry.

Mr. THORNE asked the Home Secretary whether he had received a letter from the Essex County Association of Master Bakers, asking for legislation to safeguard the health of those engaged in the industry and to restrain those who practised methods of trading uncalled for by the public and detrimental to the welfare of the community; and what action he intended taking in the matter.—Mr. CLYNES replied: The letter to which my hon. friend refers suggested a stricter enforcement of the existing law with regard to Sunday baking and delivery of bread, or preferably fresh and more effective legislation. The matter is regulated at present by the Bread Acts of 1822 and 1836, but the enforcement of these Acts is not a matter for which my department is responsible, and I have no power to intervene. It is open to any person aggrieved, or any member of the public to take action. As regards fresh legislation, I should, of course, be willing to consider any proposals that might be submitted, though I can see little prospect at present of the Government being able to find time for any Bill on this subject.

Workmen's Compensation.

Mr. BOYCE asked the Home Secretary whether the Government had under consideration the question of introducing legislation dealing with workmen's compensation; if so, whether any steps had been taken to consult with employers' as well as workers' organisations in order to ascertain the probable effect on industry of any measures which might be in contemplation; and, if the views of these organisations had not been obtained, would the Government give them an opportunity of considering any proposed legislation on this subject before its introduction into Parliament.—Mr. CLYNES replied: The question of legislation is under consideration, but I am not in a position at present to make any announcement. The hon. Member may be assured that before legislation is introduced the employers' as well as the workers' representatives will be consulted.

Slum Clearance and Re-Housing Schemes.

Mr. GRAHAM WHITE asked the Minister of Health the number and scope of slum-clearance and re-housing schemes so far approved under the Housing Act, 1930.—Mr. GREENWOOD replied: I have received resolutions declaring 11 areas to be clearance areas, one clearance order, and one compulsory purchase order. The number of persons occupying the 11 areas is approximately 5400.

Housing Progress.

Mr. SIMON asked the Minister of Health the number of houses completed under the Housing Act, 1924, in each year ending Sept. 30th, in England and Wales, from the passing of the Act to the present time, and what further houses, if any, were built during each year to be let at rents within the capacity to pay of the working classes.—Mr. GREENWOOD replied: The following statement gives the particulars asked for in the first part of the question and shows the number of houses completed during the year in England and Wales with State assistance under the Housing (Financial Provisions) Act, 1924:—

Year ended Sept. 30th—	Houses.	Year ended Sept. 30th—	Houses.
1925	12,385	1928	53,792
1926	46,489	1929	53,516
1927	97,316	1930	51,310

I regret that I am not in a position to supply particulars sought in the latter part of the question.

Treatment of Maternity Cases.

Sir BASIL PETO asked the Minister of Health what steps he intended to take to carry into effect the interim report of the departmental committee for the improvement of accommodation and treatment of women in childbirth, particularly in cases of tuberculous patients; and whether arrangements could be made for all such cases, from whatever authority, to be sent to such sanatoria as had facilities for the reception of pregnant women.—Mr.

GREENWOOD replied: I propose, in the first instance, to communicate with the local authorities in regard to certain of the recommendations in this report, including the provision of additional accommodation for women in childbirth. As regards the second part of the question, I understand that special arrangements for confinement are not usually made in tuberculosis sanatoria, and I am advised that it is generally preferable to arrange for the transfer of pregnant women in sanatoria to a maternity home for the confinement and to readmit them subsequently to a sanatorium.

National Health Insurance.

Mr. FREEMAN asked the Minister of Health whether he contemplated making any change in the administration of the national health insurance scheme so as to include adequate dental treatment for all contributors.—Mr. GREENWOOD replied: No such change as is referred to by my hon. friend is in contemplation at the present time. I may point out that already approved societies with an aggregate membership exceeding 80 per cent. of the total insured population are providing dental treatment for their members as an additional benefit.

Ex-Service Men and the Seven Years' Limit.

Major OWEN asked the Minister of Pensions the number of applications for pensions and treatment received from ex-Service men who were disqualified under the seven years' limit; how many of these had been considered; and how many claims had been granted. Major COHEN asked the Minister of Pensions the total number of claims submitted outside the seven years' time limit that had been recognised by the Ministry up to Sept. 30th, 1930, under the following headings: recognised by the provision of treatment and recognised by a grant under special sanction, respectively.—Mr. F. O. ROBERTS replied: The total number of fresh applications made since my announcement in November last were, up to the end of September, about 18,000, a majority of which were, however, received in the first few months of this period. Some 14,500 had been considered and dealt with by that date for most of which, I fear, little or no evidence was furnished or could be obtained in their support. About 800 of these applications were ascertained by the Ministry to be well founded, and of these, 20 were found to need no more than a brief course of surgical treatment, while the remainder received compensation by way of pension or other pecuniary grant.

Poison-gas Experiments.

Lieut.-Colonel MOORE asked the Secretary for War whether his attention had been drawn to the reports in the press in regard to the work carried on at the research station on Salisbury Plain; if any, and, if so, how many, old horses were handed over for experiment in poison gas and in plague bacteria cultivation; and what action he proposed to take to stop such activities on the part of the Government.—Mr. T. SHAW replied: My attention has been drawn to certain statements reported in the press to the effect that 2000 old horses have been handed over to the experimental station at Porton for experiments in poison gas and the cultivation of bacteria for spreading plague. The facts are that during the period from 1921 to 1930 only 25 horses in all have been used for experiments at Porton in connexion with poison gas but no horse, or indeed other animal, has been used at Porton for experiments in plague bacteria cultivation. I am advised that the experiments carried out were to enable data to be obtained for preventive and curative treatment in the case of horses affected by poison gases.

Sir ROBERT GOWER asked the Secretary for War what steps were taken to prevent suffering on the part of horses and other animals subjected to poisonous experiments at Government and other experimental stations in Great Britain; and whether he was satisfied that no such suffering took place.—Mr. T. SHAW replied: The officers holding vivisection licences for carrying out poison-gas experiments at the War Department Establishment work in strict conformity with the provisions of the Cruelty to Animals Act, 1876. The terms of these licences ensure that no unnecessary suffering is caused to the animals.

Experiments on Living Animals.

Mr. FREEMAN asked the Home Secretary how many experiments were conducted last year on living animals when inspectors were present and how many in their absence; and who decided whether an animal was suffering pain when no inspector was present.—Mr. CLYNES replied: As to the first part of the question I would refer my hon. friend to the answer given on July 3rd last. With regard to the last part, each holder of a licence is made responsible for seeing first that any animal which is suffering pain that is either severe or likely to endure is at once killed if the main object of the experiment has been attained: and, secondly, that any animal that is suffering pain both severe and likely to endure is at once killed in any case. The requirement is made a condition of the licence and any infringement of it brought to my notice would be severely dealt with. The Home Office Inspector informs me that he is satisfied that the condition is scrupulously observed by the holders of licences.

A Health Insurance Claim.

Mr. MUFF asked the Minister of Health if he would inquire into the reasons why national health benefit was withheld by the Royal Liver Approved Society to Stephen Rose, of 104, Balfour-street, Hull, after he had been certified by his doctor for benefit.—Mr. GREENWOOD replied: I have inquired into this case, and am informed that, on receipt of the benefit claim, the Approved Society found it necessary to ascertain whether the member's illness was due to an accident for which he had previously received compensation under the Workmen's Compensation Act. The Society have now satisfied themselves that this is not the case, and I understand that the benefit due was paid on Oct. 28th.

Local Supervision of Midwives.

Mr. MUGGERIDGE asked the Minister of Health what was regarded as the minimum number of midwives required to be in service in a district before the council of the district might be constituted the local supervising authority under Section 62 of the Local Government Act; and, in view of the dissatisfaction in the urban district of Dagenham, where 23 midwives were employed, of whom 19 resided in the district, he would reconsider his refusal to make an order directing that the urban district council shall become the local supervising authority.—Mr. GREENWOOD replied: The number of midwives practising in a district is not the only consideration to be taken into account in deciding whether the council of the district should be constituted the local supervising authority under the Midwives Acts. In the case of the urban district of Dagenham, I came to the conclusion that it would be premature to give these powers and duties to the district council having regard to the recent constitution of the council and its brief experience in administering maternity and child-welfare services, and I should not feel justified in reconsidering that decision.

TUESDAY, NOV. 4TH.

Experiments on Dogs.

Sir ROBERT GOWER asked the Home Secretary whether it was his intention to introduce a Bill to make illegal painful experiments upon dogs during the present Session of Parliament.—Mr. Clynes replied: The answer is in the negative.

Death-rates in Scotland.

Mr. MARCUS asked the Secretary of State for Scotland the separate death-rates amongst men, women, and children in Scotland in the years 1927,

1928, and 1929.—Mr. JOHNSTON replied: The following statement gives the death-rate per 1000 in Scotland in the case of males and females of all ages and children under 15 years respectively:—

	1927		1928		1929	
	M.	F.	M.	F.	M.	F.
All ages	14·07	12·89	13·87	12·85	15·09	13·99
Under 15 years ..	11·9	9·6	11·8	9·7	12·0	9·4

Physique of Military Recruits.

Mr. T. SHAW, Secretary for War, in reply to Major GLYN, said that from July 1st to Sept. 30th, 1930, 10,447 men were served with notice papers for enlistment in the Foot Guards and Infantry. Of this number 6,506, or 62 per cent., were rejected on medical or physical grounds.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt. W. Greaves, R.N.V.R., to be Surg. Lt.

The following appointments are notified:—Surg. Lts. G. Phillips to *Vivid*, for H.M. Dockyard, Devonport; and H. Lee-Duncan to *Mantis*.

ROYAL NAVAL VOLUNTEER RESERVE.

Proby. Surg. Sub-Lt. A. J. Beard to be Surg. Sub-Lt.

ROYAL ARMY MEDICAL CORPS.

Lts. to be Capts.: A. McMillian and W. G. S. Foster.

Lt. P. W. A. Agnew resigns his commn.

ARMY RESERVE OF OFFICERS.

Lt.-Col. J. D. Bowie to be Lt.-Col.

TERRITORIAL ARMY.

Lt.-Col. R. Errington to be Bt. Col.

Maj. G. J. Linklater to be Lt.-Col. and to comd. 155th (Lowland) Fd. Amb.

Capt. T. E. Hastings (late 5th Bn. Inniskilling Fus.) to be Lt., and relinquishes the rank of Capt.

ROYAL AIR FORCE.

Flying Officer P. J. McNally is granted a permanent commission in this rank.

Dental Branch.—S. C. Allen is granted a non-permanent commission as a Flying Officer.

INDIAN MEDICAL SERVICE.

Lt.-Col. L. P. Brassey to be Col.

Lt.-Col. (Bt. Col.) R. A. Needham retires.

Lts. S. S. Bhatnagar, B. Chaudhuri, H. L. Batra, A. V. O'Brien, S. T. Davies, S. M. K. Mallick, C. Mani, and E. S. S. Lucas to be Capts.

Lt. K. H. A. Gross to be Capt. (prov.).

Lt. (on prob.) Rewati Raman Bakhshi to be Capt. (prov.) (on prob.).

Lts. (T.C.) to be Capts. (T.C.).—A. S. Arora, Y. N. Lal, A. Ahmad, and K. B. Gore.

Lt. T. Das relinquishes his temp. commn.

The undermentioned appts. are made:—To be Capt. (prov.) (on. prob.): Gopal Das Malhoutra, Bantwal Panduranga Baliga, and Amar Nath Chopra.

To be Lts. (on prob.): Rewati Raman Bakhshi from I.M.S. (T.C.), Percy Vivian Bamford, Harold Duncan Ross Zscherpel, Anil Kumar Gupta, and Abani Kumar Chaudhuri.

The undermentioned officers retire: Lt.-Cols. H. G. S. Webb and J. G. G. Swan.

FLORENCE NIGHTINGALE'S CARRIAGE.—The town council of Chesterfield has presented Miss Nightingale's "Crimean carriage" to St. Thomas's Hospital. In view of her long association with the hospital this was thought to be its most appropriate home.

AN OPERATING BLOCK AT BOLTON.—Canon Elsee recently formally opened a new operating block at Bolton Infirmary, which has cost about £9000. Dr. F. R. Mallett, the president of the infirmary, described the block as the finest in the British Isles. The cost was undertaken by the 160 churches in the district, but so far only about £3000 has been obtained.

MEDICAL NEWS

University of Cambridge.

On Nov. 1st the following degrees were conferred:—

M.B. & B.Chir.—J. H. Gibbens, G. J. Gross, and W. R. F. Wood.

M.B.—H. J. Heathcote.

Royal College of Physicians of London.

At a quarterly comitia of the College, held on Oct. 30th with Sir John Rose Bradford, the President, in the chair the following candidates were admitted to the Membership of the College:—

Joges Chandra Banerjea, John Robert Blazé, Harold Ernest Brown, Alfred Bramwell Cook, Charles Clifford Davis, Percival Cholmondeley Chalmers de Silva, Doris Louise Durie, Horace Evans, Raymond Eustace Ford, Traugott Ernest Gumpert, Francis Findlay Hellier, Harold Percival Himsworth, Mohamed Ahmed Ibrahim, Louis Philippe Eugène Laurent, John Neil Leitch, Robert Alexander McCance, Owen Reginald McEwen, George Osborne Mitchell, John Henry Mulvany, Thomas Saint Martin Norris, James Vincent O'Sullivan, Trevor Kingsley Owen, James William Reid, Thomas Robson, Harold Edmund Rykert, Baldev Singh, and William Wood.

Licences to practise were conferred upon 153 candidates (including 22 women) who have passed the final examination of the Conjoint Board. The following are the names and medical schools of the successful candidates:—

E. F. Adams, Manchester; G. L. Alcock, Cambridge and St. Thomas's; R. M. Alderton, London; G. H. H. Ames, L.D.S., Univ. Coll.; M. Baillie, King's Coll.; G. Balasuriya, Ceylon and Guy's; N. B. Bapat, Bombay and Birmingham; C. O. Barnes, Cambridge and St. Bart.'s; C. R. G. Barrington, Univ. Coll.; J. H. Bartlett, Cambridge and St. Mary's; A. K. Basu, M.B., Univ. Coll.; D. S. Bateman, Oxford and St. Thomas's; J. H. Beilby, Cambridge and St. Thomas's; H. H. W. Bennett, London; J. N. Bhada, L.M.S., Univ. Coll.; Ilma B. S. Bingemann, St. Mary's; A. T. Blair, Cambridge and St. Bart.'s; D. A. S. Blair, Cambridge and St. Thomas's; W. V. D. Bolt, Guy's; O. H. Bostock, Cambridge and St. George's; J. F. Brock, Oxford and London; W. D. W. Brooks, Oxford and St. Mary's; P. Brown, Leeds and London; J. Carlton, Guy's; G. T. W. Cashell, L.M.S.S.A., King's Coll.; D. N. Chatterji, M.B., London; H. T. Chilton, Birmingham; R. T. V. Clarke, Oxford and St. Bart.'s; A. F. Clift, Toronto and London; E. C. Coaker, Oxford and St. Mary's; Adelina A. Collins, King's Coll.; W. D. Coltart, St. Bart.'s; L. C. Crane, Manchester; F. J. H. Crawford, Liverpool; K. K. Dalal, M.B., London; A. F. Davy, St. Bart.'s; P. T. L. Day, Guy's; C. A. V. de Candole, Cambridge and St. George's; V. Della, Manchester; Achanta L. Devi, Punjab and Royal Free; S. B. Dimson and G. W. Duncan, Univ. Coll.; D. Durbach, Cape and St. Bart.'s; E. C. Dymond, L.M.S.S.A., Bristol and St. Mary's; W. S. Dyson, Cambridge and Manchester; M. Ellis, Cambridge and Leeds; D. G. Evans and Monica M. M. Fisher, Cambridge and Univ. Coll.; E. C. I. Foot, St. Bart.'s and Sheffield; H. W. F. Freeth, L.D.S., Middlesex; G. O. Gould, Cambridge and Middlesex; K. Ghosh, Royal Free; Helen G. Gifford, Birmingham; A. H. Grace, St. Bart.'s; G. J. Griffiths, Westminster; L. H. Griffiths, Middlesex; J. H. Hall, Cambridge and St. Thomas's; Marjorie K. Hall, Royal Free; E. O. Halliwell, Leeds; F. R. T. Hancock and J. O. Harrison, Cambridge and St. Bart.'s; Lettice P. Harrison and Carrie I. Hearn, Royal Free; J. E. R. Heppolette, L.M.S.S.A., Bengal and St. Mary's; A. R. C. Higham, St. George's; W. Hogg, St. Bart.'s; U. M. Hopkins, Bristol; B. Horwitz, Cape and London; H. R. Hovsha, King's Coll.; H. W. Howell, London; A. D. H. Hugo, Guy's; B. Isaac, St. Mary's; L. Jacobson, Cape and London; E. N. Jenkinson, St. Bart.'s; W. J. Johnson, Guy's; A. Jokl, M.D., Middlesex; C. J. King-Turner, Oxford and St. George's; G. C. Knight, St. Bart.'s; F. S. Krusin, B.D.S., Guy's; D. H. Le Good, St. Thomas's; A. H. Lendon, M.B., Adelaide; E. Lethem, L.M.S.S.A., Guy's; L. C. Lodge, Leeds and London; J. Loofe, Leeds; S. H. Lubner, London; P. H. Maal, M.D., Liverpool; J. E. S. MacDonald, London; Henrietta M. Macleod, Royal Free; J. D. McVean, Cambridge and Manchester; F. G. Maitland, Cape and St. Mary's; Dorothy Makepeace, King's Coll.; G. R. Malkin, St. Bart.'s; J. T. Mani, Durham; J. B. Marshall, St. Mary's; F. Mattar, Charing Cross; A. F. Merchant, M.B., Bombay; Barbara A. Merlin, Royal Free; T. W. Mimpriss, St. Thomas's; D. C. Mintzman, Paris and King's Coll.; H. S. Morton, Dalhousie and London; C. G. Muller, Madras and St. Mary's; D. K. Mulvany, King's Coll.; B. B. Nanavatty, M.B., Royal Free; Gladys L. Neill, King's Coll.; P. W. Parkes, Birmingham; M. A. Parthasarathy, Bombay and Guy's; R. O. Payne, Guy's; J. H. Peel, Oxford and King's Coll.; H. J. Powell, L.M.S.S.A., St. Mary's; D. L. Pugh, Cardiff and Univ. Coll.; Louise Rees, Cardiff and Charing Cross; V. H. Riddell, Cambridge and St. George's; S. L. Rikhye, M.B., London; Anna L. M. E. Ringdahl, Univ. Coll.; M. A. Robertson, Cambridge and London; M. W. Robinson, Manchester; A. W. M. Rooke, Univ. Coll.; S. Ryman, M.D., Zürich; Esther Samuel, M.B., Madras; W. W. Sargant, Cambridge and St. Mary's; S. Schenkman, Cape and London; J. B. Schofield, Guy's; Margaret W. Schreiber, Royal Free; J. Secker, Durham; Ester C. Seifert, Westminster; C. K. Simpson, Guy's; M. Singh, Lahore and Birmingham; T. Singh, L.M.S.S.A., Punjab and Charing Cross; E. H. P. Smith, Birmingham; S. Smith, London; R. H. B. Snow, Cambridge and St. Thomas's; N. Solomon, Witwatersrand and St. Bart.'s; Cecilia M. Susai, Bombay and Birmingham; R. S. Taylor, L.D.S., Middlesex; J. W. P. Thompson, Cambridge and

St. Thomas's; G. M. Tickler, Cambridge and King's Coll.; G. E. M. Turner, Middlesex; A. W. Vaisey, Cambridge and St. Thomas's; C. K. Vartan, St. Bart.'s; M. G. Vatsalya, Royal Free; C. Verity, M.B., Manchester; C. Wall, London; H. Walton, Cambridge and Manchester; J. G. Warren, Cambridge and London; S. I. Weinstein, Witwatersrand and London; Mary J. Westall, Royal Free; A. M. Weston, Cambridge and Guy's; K. L. Wig, M.B., Charing Cross; A. B. Williamson, Durham; H. W. Williamson, Cambridge and St. Bart.'s; C. Wright, Univ. Coll.; F. J. Wright, Cambridge and London; and C. H. Wrigley, Cambridge and St. Thomas's.

Diplomas in Public Health were conferred jointly with the Royal College of Surgeons upon the following:—

M. Ahern, M. Ata Ullah, Balkrishna, C. L. Bhola, H. P. Chaudhuri, Annie E. Connan, A. M. Critchley, F. M. M. Eyton-Jones, V. Freeman, D. N. Ghosh, K. T. Hosain, D. R. Kajuria, R. G. Keays, B. S. Khurana, J. N. Leitch, J. C. H. Mackenzie, Mary M. Mackenzie, Y. B. Mangrulkar, A. H. Morley, P. Singh, W. H. S. Wallace, and J. S. Westwater.

The Diploma in Gynæcology and Obstetrics was conferred upon Hilda M. Lazarus, Madras and Charing Cross.

Sir Thomas Horder, Dr. Comyns Berkeley, Sir William Willcox, Dr. A. G. Gibson, Dr. M. A. Cassidy, and Dr. Carey Coombs were elected councillors. Dr. Comyns Berkeley was appointed representative of the College on the Central Midwives Board. Dr. R. A. Young was re-elected a member of the Committee of Management of the Conjoint Board, and Dr. J. A. Nixon a representative on the Court of the University of Bristol.

The President announced that Prof. C. C. Okell had been appointed by the Council to be Milroy lecturer for 1932, and that the Jenks memorial scholarship for 1930 had been awarded to Frederick Basil Kiernander, until lately of Epsom College.

Society of Apothecaries of London.

At recent examinations the following candidates were successful:—

Surgery.—C. L. Ferguson, London Hosp.; H. R. Fosbery, Middlesex Hosp.; V. R. O. Lahanmi, Manchester Univ.; S. Lokecz, St. Bart.'s Hosp.; J. M. L. Love, St. Mary's Hosp.; E. H. W. Lyle, Cambridge Univ. and King's Coll. Hosp.; C. O. Parsons, Sheffield Univ. and St. Bart.'s Hosp.; L. C. H. Sykes, Leeds Univ.; and P. Wade, Liverpool Univ.

Medicine.—R. F. T. Finn, St. Bart.'s Hosp.; B. C. Ghose, Durham Univ.; C. R. Graham, Queen's Univ., Kingston, Ontario; M. Halperine, Univ. of Paris and London Hosp.; T. C. Keble, St. Mary's Hosp.; R. D. Newton, St. Bart.'s Hosp.; C. G. Nicol, St. Mary's Hosp.; G. S. Rozario, King's Coll. Hosp.; and C. P. Seeley, St. Mary's Hosp.

Forensic Medicine.—E. J. Jones, School of Medicine, Cardiff; and R. D. Newton, St. Bart.'s Hosp.

Midwifery.—H. Glynn, Charing Cross Hosp.; C. R. Graham, Queen's Univ., Kingston, Ontario; J. Irger, Univ. Coll. Hosp.; and W. A. Naidu and H. I. Newman, London Hosp.

The Diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery: M. Asaad, R. F. T. Finn, B. C. Ghose, H. Glynn, C. R. Graham, M. Halperine, T. C. Keble, J. M. L. Love, H. I. Newman, R. D. Newton, C. G. Nicol, and C. P. Seeley.

Royal College of Surgeons of Edinburgh.

At the recent dental examinations of the College, out of 38 candidates entered, the following have passed the final professional examination and have been granted the diploma L.D.S. R.C.S. Edin.: R. F. K. Webster, J. S. Couper, A. W. Gregory, D. K. Cowan, B. A. Armitage, L. J. Goggins, and L. L. Whitton, and Anne M. Munro.

University of Bombay.

Dr. Abraham S. Erulkar has been elected dean of the Faculty of Medicine in the University.

Medical Society of Individual Psychology.

The next meeting will be on Nov. 13th, at 8.30 P.M., at 11, Mandos-street, W.1, when Dr. F. G. Crookshank will speak on Individual Psychology and the Bases of Medical Science.

Fellowship of Medicine and Post-Graduate Medical Association.

Arrangements for the coming week will be found in our Medical Diary. Continuing until Nov. 29th is an afternoon and evening course on Venereal Disease at the London Lock Hospital. From the 10th to the 28th the staff at the Royal Waterloo Hospital will give a course in Medicine, Surgery, and Gynæcology. From Nov. 17th to Dec. 13th a course of lectures illustrated by cases will be given at 5 P.M. at the West End Hospital for Nervous Diseases. An all-day course on Diseases of the Chest will be given at the City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, from Nov. 17th to 29th. Another all-day course on Diseases of the Rectum will be held at St. Mark's Hospital from Nov. 24th to 29th. Further particulars may be had from the Secretary of the Fellowship of Medicine, at 1, Wimpole-street, London, W. 1.

Prince of Wales's Hospital Dinner.

The annual dinner of the Prince of Wales's Hospital Reunion Association will be held at the Trocadero Restaurant, Piccadilly Circus, W., on Thursday, Nov. 27th, at 7.45 for 8 P.M. with Mr. W. E. Tanner in the chair. Those wishing to be present should inform Dr. Bruce Williamson, 137, Harley-street, W. 1, stating the number of guests they are bringing.

West Riding Edinburgh Graduates.

The West Riding Association of Graduates of the University of Edinburgh will hold their annual general meeting at 6.45 P.M. and dinner at 7.30 P.M., on Friday, Nov. 21st, at the Great Northern Hotel, Leeds. Sir Norman Walker is to be the guest of the evening. Any graduate requiring further information should apply to the hon. secretary, at 33, Manor Row, Bradford.

National Institute for the Deaf.

A Conference on the Higher Education of the Deaf will be held by this Institute at University College, Gower-street, London, W.C., at 2.30 P.M., on Wednesday next, Nov. 12th. Lord Charnwood will preside and the business will be to consider a report from the Committee on the Higher Education of the Deaf and decide what steps, if any, should be taken towards realising the scheme submitted.

Specialist Nurses.

The Middlesex Hospital is establishing a system of specialist nursing. In addition to the diploma upon the completion of four years' training in general nursing, nurses will be able to obtain a special certificate of having received additional training in some particular branch. The new nurses' home comprises a model ward and operating theatre in which practical instruction is given with the aid of dummy patients.

Retirement of Two Coroners.

Sir Walter Schröder, coroner for Central London, retired last week at the age of 75 after 60 years' association with coroner's work in London and district. He has held over 30,000 inquests and attended 20,000 others. On relinquishing his duties he received a presentation from the coroners' officers.—Dr. H. R. Oswald has retired from the coronership of the Western District of London, where he has served since 1919.

Contributory Schemes in Essex.

A contributory scheme for Chelmsford Hospital will come into operation on Jan. 1st next. A married man, by contributing 3*d.* per week, will be entitled, together with his wife and children up to the age of 16, to the benefits of the scheme; single men and women, with dependants, will contribute a like sum, and those without dependants 2*d.* per week.—Of the income of the Colchester General Hospital, amounting to about £25,000, the workers' committee for the borough and the contributory scheme for the country districts together provide more than £10,000.

Memorial to Sir G. S. Abram.

Lady Abram and Lieutenant R. S. Abram, R.N., recently unveiled memorial tablets at the Royal Berkshire Hospital, Reading, to the late Sir George Stewart Abram. They are placed in the new balconies for open-air treatment at the hospital which, the inscription records, were his "cherished project." Sir George was physician to the hospital from 1904 to 1928. The cost has been "defrayed by his friends and admirers."

Birmingham's Mental Patients.

Last week an extension was opened of Witton Hall, Erdington, one of the homes belonging to the city of Birmingham for the care of healthy mental cases. The extension, which has cost £12,500, provides accommodation for 98 aged men. It was stated at the opening ceremony that proper classification at other mental institutions would compel the public assistance committee to provide very considerable further accommodation.

Congress of Industrial Medicine.

The Sixth International Congress of Industrial Accidents and Diseases will be held at Geneva on August 3rd, 1931. The principal questions for discussion will be the sequelæ and final results of traumatic wounds of the spine, traumatism of blood-vessels, cutaneous affections in relation to occupation, the influence of previous health on the results of industrial accidents, illness affecting men working upon cement and artificial stones, the reaction of the organism towards the toxic substances used in industry, and fatigue. Further information may be had from the secretary of the British National Committee, Industrial Welfare Society, 51, Palace-street, Westminster, London, S.W. 1.

King's College Hospital.

The authorities of this hospital have now decided to admit a limited number of women students to the clinical course.

Southampton Contributory Scheme.

This scheme began work last year, when £9252 was collected; in less than ten months of the present year the contributions have reached £16,371. There are 764 collectors.

Extension of Worcester Infirmary.

At a town's meeting of the citizens it has been decided to raise £90,000 for extensions to Worcester General Infirmary. Although only £18,000 is in hand the first part of the scheme is to be begun at once.

Presentation.

Dr. Joseph Bradley, the oldest medical practitioner in Salford, and his wife, who recently celebrated their golden wedding, were last week presented at the Salford Town Hall with an illuminated address and a cheque by their medical friends in Salford. Dr. Bradley has rendered loyal service to Salford not only in the medical profession but in the general civil life of the city for half a century, and for more than 30 years has given devoted service to public education.

Medical Diary

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
MONDAY, Nov. 10th.—5 P.M., UNITED SERVICES. Paper. Group Captain Martin Flack: Air-sickness and Sea-sickness.
TUESDAY.—5 P.M., THERAPEUTICS. An informal Discussion on The Uses of Mercurochrome. Opener: Dr. J. H. Burn. UROLOGY: Members of this section are specially invited to attend and take part in the Discussion. 8.30 P.M., PSYCHIATRY. Presidential address. Dr S. A. Kinnier Wilson: The Approach to the Study of Hysteria.
WEDNESDAY.—5.30 P.M., SURGERY: SUBSECTION OF PROCTOLOGY. Presidential address. Mr. Lionel E. C. Norbury: Multiple Primary Malignant Growths, with Special Reference to the Colon and Rectum. Illustrative specimens will be shown.
THURSDAY.—8.30 P.M., NEUROLOGY AND OPHTHALMOLOGY. Special Discussion on Vascular Tumours of the Brain and Spinal Cord. Openers: Dr. A. Lindau (Sweden), Mr. Treacher Collins (Ophthalmology), Sir Percy Sargent (Neurology). Followed by Dr. J. G. Greenfield, Mr. G. Jefferson, Dr. Dorothy Russell, and others. Members who wish to take part in the Discussion please communicate with Dr. C. P. Symonds, 74, Wimpole-street, London, W.
FRIDAY.—5.30 P.M., CLINICAL. (Cases at 4.30 P.M.) Dr. F. E. Saxby Willis: Aortic Aneurysm and ? Syphilis of the Lung. Dr. F. Parkes Weber and Dr. M. Scholtz: Anæmia with Splenomegaly. Simple Achlorhydric Anæmia (Dr. L. J. Witts). Mr. Harold Edwards: ? Specific Disease of the Humerus in a Girl aged 15 Years. Dr. D. W. Buxton: Thrombo-angiitis Obliterans. Mr. R. Rutherford: Hermaphroidism. Mr. Paul Bernard Roth: Fracture Dislocation of the Ankle Joint. Dr. Harold Avery: Multiple Osseous Defects. Mr. Cecil P. G. Wakeley: Congenital Short Humerus. Advanced Osteo-arthritis of the Hip-joint. Mr. Eric A. Crook: Cyst of the Neck. Other cases will be shown. Reports will be given on the following cases that have been shown at previous meetings: Mr. Cecil P. G. Wakeley: Vascular Tumour of the Brain. Dr. Hugh S. Stannus: A Case Illustrating Banti's Syndrome in Syphilis. Dr. Salisbury Sharpe: Tuberculosis of the Prostate. OPHTHALMOLOGY. No meeting.

ROYAL INSTITUTION, 21, Albemarle-street, W.
TUESDAY, Nov. 11th.—5.15 P.M., Mr. C. D. Ellis, F.R.S., Aspects of Radio-activity.
THURSDAY.—5.15 P.M., Prof. J. B. Haldane: Physiology of Water.

HARVEIAN SOCIETY OF LONDON.
THURSDAY, Nov. 13th.—8.30 P.M. (at the Town Hall, Paddington Green, W.), Two Cinematograph Films by Kodak Ltd.

SOCIETY OF MEDICAL OFFICERS OF HEALTH, 1, Upper Montague-street, Russell-square, W.C.
FRIDAY, Nov. 14th.—5 P.M., Prof. David Burns: Some Points of Contact between Preventive Medicine and Physiology.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
MONDAY, Nov. 10th.—8.30 P.M., Discussion on The Diagnosis and Treatment of Malignant Disease of the Chest. To be introduced by Prof. Chevalier Jackson.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.
FRIDAY, Nov. 14th.—8.45 P.M. (at the Miller General Hospital, Greenwich-road, S.E.), Dr. E. P. Cumberbatch and Dr. C. A. Robinson: Diathermy in Gynæcology.

PADDINGTON MEDICAL SOCIETY.
TUESDAY, Nov. 11th.—9 P.M. (at the Great Western Hotel, Praed-street, W.), Dr. C. M. Wilson: The Relationship of the Consultant to the General Practitioner.

BIOCHEMICAL SOCIETY.
FRIDAY, Nov. 14th.—5 P.M. (at St. Thomas's Hospital Medical School), Various communications.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.
THURSDAY, Nov. 13th.—5 P.M., Dr. L. S. T. Burrell: Indications for Treatment in Pulmonary Tuberculosis (Mitchell Lecture.)

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.
MONDAY, Nov. 10th.—5 P.M., Mr. C. P. G. Wakeley: Demonstration of Specimens Illustrating the Pathological Conditions of the Scalp and Cranium.
THURSDAY.—5 P.M., Mr. J. Herbert Fisher: Ocular Muscles, Movements and Judgments (Bradshaw Lecture).
FRIDAY.—5 P.M., Sir Arthur Keith: An Account of Col McCarrison's Experiments in the Production of Urinary Calculi (with specimens).

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, Nov. 10th to SATURDAY, Nov. 15th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. Mon. at 4 P.M. free lecture by Mr. L. P. Winsbury White on Modern Diagnostic Methods in Surgical Diseases of the Urinary Tract (with lantern slides). Special M.R.C.P. Lecture at 8.30 P.M. Dr T. Izod Bennett: The Relations of the Colon and Stomach in Medicine.—SAMARITAN HOSPITAL FOR WOMEN, Marylebone-road, N.W. Wed., free demonstration from 9.30 A.M. to 12.30 P.M. by Mr. McKim McCullagh (Gynæcology). — ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, Broad-street W.C. Afternoon Course in Ophthalmology.—LONDON LOCK HOSPITAL, Dean-street, W. Afternoon-evening Course in Venereal Disease.—ROYAL WATERLOO HOSPITAL, Waterloo-road. Course in Medicine, Surgery, and Gynæcology occupying afternoons and some mornings.—Further particulars from the Fellowship of Medicine.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, Nov. 10th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose and Throat Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Throat, and Ear Clinics. Operations.
FRIDAY.—10.30 A.M.: Ear, Nose, and Throat Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Children's Diseases Clinics. Operations.

KING'S COLLEGE, Strand, W.C.
THURSDAY, Nov. 13th.—5 P.M., Mr. W. Robson, D.Sc.: Protein Metabolism (First of four lectures.)

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.
THURSDAY, Nov. 13th.—9 P.M., Mr. G. J. Jenkins: Otitic Vertigo.

UNIVERSITY COLLEGE, Gower-street, W.C.
MONDAY, Nov. 10th.—5 P.M., Mr. L. E. Bayliss, Ph.D.: Respiratory Functions of the Blood. (First of four lectures.)

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.
WEDNESDAY, Nov. 12th.—4 P.M., Mr. Alan H. Todd: Painful Feet.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE (Public Health Division).
TUESDAY, Nov. 11th.—3 P.M., Sir Leonard Hill: Atmospheric Pollution.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, Nov. 11th.—5 P.M., Dr. A. Whitfield: Tuberculosis Cutis (1).
THURSDAY.—5 P.M., Tuberculosis Cutis (2).

ST. PAUL'S HOSPITAL, Endell-street, W.C.
WEDNESDAY, Nov. 12th.—4.30 P.M., Dr. G. R. Mather Cordiner: Radiography; Its Relation to Diagnosis of Diseases of the Urinary Tract.

NATIONAL HOSPITAL, Queen-square, W.C.
MONDAY, Nov. 10th.—12 noon, Dr. Greenfield: Vascular Disease in the Nervous System. 2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Purdon Martin: Neurosyphilis.
TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Symonds: Late Subdural Hæmorrhage.
WEDNESDAY.—2 P.M., Dr. Martin: Out-patient Clinic.
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Riddock: Myopathy.
FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Carmichael: Meningitis.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.
FRIDAY, Nov. 14th.— 4 P.M., Mr. Archer Ryland: Demonstrations of Museum Specimens.

ROYAL NORTHERN HOSPITAL, Holloway-road, W.
TUESDAY, Nov. 11th.—3.15 P.M., Mr. A. Lisle Punch: Demonstration of Cases.

THE HALLEY STEWART TRUST.
TUESDAY, Nov. 11th, and the following THURSDAY.—6 P.M. (in the Memorial Hall, Farringdon-street, E.C.), Sir George Newman: Modern Collective Humanism at Work, and Gains and Losses in National Health: Needs of the Future.

THE CHADWICK TRUST.
FRIDAY, Nov. 14th.—8.15 P.M. (at 9, Conduit-street, W.), Mr. J. H. Coste, D.Sc.: Objects and Methods of Sewage Treatment.

INSTITUTE OF HYGIENE, 28, Portland-place, W.
WEDNESDAY, Nov. 12th.—3.30 P.M., Dame Louise McIlroy: The Responsibility of the State to Motherhood.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
WEDNESDAY, Nov. 12th.—4 P.M., Dr. R. Stenhouse Williams: The Importance of a Complete Study of the Nutritional Value of Milk.
THURSDAY.—4 P.M., Mrs. Marie Stopes, D.Sc.: Present Day Technique and Clinical Results in Contraception.

NATIONAL INSTITUTE FOR THE DEAF.
WEDNESDAY, Nov. 12th.—2.30 P.M. (at University College, Gower-street, W.C.), Discussion on Report of Committee on Higher Education and Training of the Deaf.

ANCOATS HOSPITAL, Ancoats, Manchester.
THURSDAY, Nov. 13th.—11 A.M., Mr. F. H. Diggle: Clinical Demonstration. 4.15 P.M., Mr. P. G. McEvedy: Some Simple Forms of Treatment.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
TUESDAY, Nov. 11th.—4.15 P.M., Dr. J. Wharton: Demonstration of Ophthalmic Cases.
FRIDAY.—4.15 P.M., Mr. J. B. Macalpine: Remarks on Certain Symptoms of Urinary Disease.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINIC.
FRIDAY, Nov. 14th.—3.30 P.M. (at the Royal Infirmary), Mr. Ferguson: Ocular Manifestations of Syphilis.

Appointments

ALLISON, R. S., M.D. Belf., M.R.C.P. Lond., has been appointed Assistant Physician at the Royal Victoria Hospital, Belfast.
BOLTAU, H. K. V., M.D. Lond., Medical Superintendent, Rendlesham Hall, Suffolk.
Certifying Surgeons under the Factory and Workshop Acts: MCCORMIC, J. E., M.B., B.Ch. Durh. (Portishead, Somerset); OWEN, E. D., L.R.C.P. Lond., M.R.C.S. (Neath, Glam); and RAMSAY, A., M.B., Ch.B. Edin. (Fauldhouse, West Lothian).

Vacancies

For further information refer to the advertisement columns.
Albert Dock Hospital, Connaught-road, E.—Asst. Surg.
Birmingham City Maternity and Child Welfare Committee.—Asst. M.O. £500.
Birmingham, Dudley-road and Selly Oak Hospitals.—Asst. Pathologist. £500.
Birmingham General Hospital.—Surg. Cas. O. £400.
Birmingham, Selly Oak Hospital.—Surgeon. £700.
Bradford, Royal Eye and Ear Hospital.—Jun. H.S. £150.
Brighton, Lady Chichester Hospital.—Jun. and Sen. H.P.'s. At rate of £50 and £100 respectively.
Burnley, Victoria Hospital.—H.P. At rate of £150.
Canterbury, Kent and Canterbury Hospital.—Hon. Surg.
Cardiff Royal Infirmary, Venereal Diseases Clinic.—M.O. (part-time). £300.
Chester County Mental Hospital.—Jun. Asst. M.O. £350.
Children's Hospital, Hampstead.—Res. M.O. At rate of £100.
Connaught Hospital, Orford-road, E.—Res. H.S. At rate of £100. Also Hon. Visiting Dental Surgeon.
East Ham Memorial Hospital, E.—Hon. Surg., Hon. Phys. Also Hon. Radiologist.
Edinburgh, Royal Maternity and Simpson Memorial Hospital.—Res. Obstet. Officer, &c. £250.
Elizabeth Garrett Anderson Hospital, Euston-road.—H.P., Obstet. Asst., three H.S.'s. Each at rate of £50. Also Clin. Assts.
Exeter, Royal Devon and Exeter Hospital.—H.P. At rate of £150.
Guildford, Royal Surrey County Hospital.—Asst. Path. £500.
Hampstead General and North-West London Hospital, Haverstock-hill, N.W.—Cas. M.O. At rate of £100.
Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—Asst. in Dept. of Pathology. £350.
Hospital for Sick Children, Great Ormond-street, W.C.—Part-time Jun. Cas. O. At rate of £150. Also H.S. and H.P. Each at rate of £100.
Huddersfield, County Borough of.—Asst. M.O.H. £500.
Hull, Beverley-road Institution.—Asst. M.O. £300.
Hull Royal Infirmary.—Asst. H.P. At rate of £130.
Ipswich, East Suffolk and Ipswich Hospital.—H.S. £120.
Kidderminster and District General Hospital.—H.S. £150.
Liphook, Hants, King George's Sanatorium for Sailors.—Asst. M.O. At rate of £200.
Liverpool University.—Lecturer in Dermatology.
London Jewish Hospital, Stepney Green, E.—Res. M.O., and Cas. O. Each at rate of £150. Jun. Res. M.O. At rate of £100. Also Clinical Assts.
Maidstone, Kent County Ophthalmic and Aural Hospital.—Ophth. H.S. At rate of £200.
Manchester, Ancoats Hospital.—Orthop. H.S. At rate of £100.
Margate Borough.—M.O.H., &c. £900.
Metropolitan Hospital, Kingsland-road, E.—Surg. to Ear, Nose, and Throat Dept.
Middlesbrough Education Committee.—Asst. School M.O. £500.
Newcastle General Hospital.—Sen. Res. M.O. £300. Also H.P. and H.S. Each at rate of £100.
Newcastle-upon-Tyne Hospital for Sick Children.—Res. H.P. At rate of £95. Res. Sen. H.S. Also Jun. H.S. Each at rate of £100.
Northampton County Mental Hospital, Berrywood.—Jun. Asst. M.O. £350.
Northamptonshire County Council Education Committee.—Asst. School M.O. £500.
Northwood, Middlesex, Mount Vernon Hospital.—Res. M.O. £300.
Oswestry, Shropshire Orthopædic Hospital and Agnes Hunt Surgical Home.—Two H.S.'s. Each at rate of £200.
Plymouth Central Hospital.—H.S. £120.
Preston, Biddulph Grange Orthopædic Hospital.—Sen. H.S. At rate of £250.
Preston County Borough.—Asst. School M.O. £600.
Princess Louise Kensington Hospital for Children, St. Quintin-avenue, N. Kensington.—H.P. At rate of £100. Also Hon. Asst. Anæsthetist and Hon. Assist. Dental Surgeon.
Queen's Hospital for Children, Hackney-road, E.—H.P. At rate of £100.
Richmond, Surrey, &c., Joint Isolation Hospital Committee, Hospital, Mogden.—Res. M.O. £400.
Royal Free Hospital, Gray's Inn-road, W.C.—Surg. Reg. £200. Res. H.S. to Ear, Nose, and Throat Dept., Res. Cas. O. £150. Res. Anæsthetist to Gynæcological, &c., Unit. £150. Half-time Gynæcological Reg., Med. Reg., and District Obstetric Asst. Each £100. Also Res. H.S.'s, H.P.'s, Asst. Anæsthetist, &c.
Royal Northern Hospital, Holloway, N.—Two Surgeons.
Ryde, Royal Isle of Wight County Hospital.—Res. H.S. At rate of £180.
St. Mary's Hospital, Inst. of Path. and Research, Paddington, W.—Research Studentship. £200.
Sheffield Royal Hospital.—Ophth. H.S. At rate of £80.
Shoreditch Metropolitan Borough.—Tuberculosis Officer. £750.
Walsall General Hospital.—Cas. H.S. At rate of £120.
West London Hospital, Hammersmith-road, W.—Hon. Reg. to Throat, Nose, and Ear Department.
Westminster Hospital Annexe, 66, Fitzjohn's-avenue, Hampstead. Jun. H.S. At rate of £250.
West Riding of Yorkshire C.C.—Asst. Bacteriologist. £500.
Wigan Royal Infirmary.—H.S. At rate of £150.
Willesden Urban District Council.—Public Vaccinator.
Winchester, Royal Hampshire County Hospital.—H.S. At rate of £150.
Wolverhampton Royal Hospital.—H.S. At rate of £150.
Woolwich and District War Memorial Hospital, Shooters-hill, S.E.—H.S. £100.
Yelverton, Udal Torre Sanatorium.—Res. M.O. £450.
York Dispensary.—Res. M.O. £150.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Market Drayton (Salop), Hoyland Nether (Yorkshire), Cheadle (Staffordshire), and at Church Gresley (Derbyshire).

The Home Secretary gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act for the Districts of the Beverley, Bridlington, Goole, Great Driffield, Kingston-upon-Hull, Pocklington, and Selby County Courts (Circuit No. 16). Applications should reach the Private Secretary, Home Office, Whitehall, S.W., not later than Nov. 22nd.

Births, Marriages, and Deaths

BIRTHS.

ADAMSON.—On Oct. 27th, at Hendon, the wife of A. Fairgrieve Adamson, M.D., of a son.
CAPELL.—On Nov. 2nd, at Cricklewood-lane, N.W., the wife of L. F. Capell, M.B., Ch.B. Edin., of a daughter.
COOKE.—On Oct. 25th, at Chelwood Gate, Sussex, the wife of Dr. Alec Cooke, of a daughter.
VERDON.—On Oct. 20th, at Wellington, S. India, the wife of Major Philip Verdon, I.M.S., of a son.

MARRIAGES.

ANSON—ATTWELL.—On Nov. 6th, at St. Lawrence Church, Ramsgate, Charles Everett Heyworth Anson, M.B., B.S. Lond., to Mabel Winifred, youngest daughter of Mr. and Mrs. J. J. Attwell, of Ramsgate, Kent.
GRAY—SLOAN.—On Oct. 29th, at St. Giles' Cathedral, Edinburgh, James Douglas Allan Gray, M.B., Ch.B., B.Sc., M.R.C.P.E., D.P.H., to Agnes Dorothy Sloan, M.B., Ch.B.
HARRISON—DAVIS.—On Nov. 1st, at Beckenham, Kent, Dr. W. R. E. Harrison to Dr. Mirabel Grace Davis.

DEATHS.

BARRON.—On Oct. 30th, at Lynorne, Shalford, Surrey, Willie Netterville Barron, C.M.G., M.V.O., M.R.C.S., L.R.C.P.
MACALISTER.—On Nov. 2nd, at Guy's Hospital, after a long illness, George Hugh Macalister, M.D., M.R.C.P., late Principal of King Edward VII. College of Medicine, Singapore, aged 51.
MULVANY.—On Oct. 27th, at Hotel Brice, Nice, Edward Mulvany, Surgeon Leiutenant-Colonel, Indian Medical Service, aged 80.
ROBERTS.—On Oct. 27th, at Eastbourne, Charles Gordon Roberts, M.A., M.B., D.Sc., of Banbury, Wash-lane, Clacton-on-Sea, formerly of Halstead, aged 66.
WATTS.—On Nov. 2nd, accidentally drowned, Cecil Francis Watts, M.A., B.Chir., M.R.C.S., L.R.C.P., of St. Bartholomew's Hospital, aged 28.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

SCOTLAND'S CONTRIBUTION TO MODERN MEDICINE.

Abstract of a Broadcast Talk by

SIR LESLIE MACKENZIE, M.D., LL.D.,
LATE MEDICAL MEMBER OF THE SCOTTISH BOARD OF HEALTH.

SCOTLAND, with a long and distinctive history, has retained, within the Union of the Kingdom, its own primary institutions, such as the Law Courts and the Scottish Laws, its system of County and Burgh administration, its central Government Departments—the Department of Health, the Education Department, the Department of Agriculture, the Scottish Registrar-General, and several others. In many ways the administrative bodies, both central and local, differ from those of the other Kingdom. But the main fact is that those bodies are under the general control of the Secretary of State for Scotland, and are worked as independent bodies directly responsible to Parliament through a Secretary of State. Many sections, therefore, of modern medicine take a special colour from the fact that they have been developed in the Northern Kingdom. I shall try to indicate broadly what Scotland has done and is doing to promote the development of modern medicine, using only such matter as appears to be predominately, if not perhaps exclusively, Scottish.

[Sir Leslie here recalled the individual contributions of great Scotsmen like Simpson, Macewen, Ogston, Manson, and Mackenzie to progressive learning, and continued :—]

THE SCOTTISH MEDICAL OUTPUT.

The Medical Register as at date Jan. 1st, 1930, contained 54,870 names of registered medical practitioners. Of this total 26,314, that is about 48 per cent., entered by the English Register; 17,198, that is 32 per cent., by the Scottish Register. This shows, in absolute numbers, a substantial preponderance for England. But if we ask what is the proportion in each country to the total population of each country, the facts reveal a striking difference. England, with a population of some 36,000,000 supports medical schools or examining bodies that produce 26,314 graduates, that is about 0·73 per 1000 of the population. Scotland, with a population of about 5,000,000 supports medical schools or examining bodies that produce 17,198 graduates, that is about 3·4 per 1000 of the population. It is true that the number of graduates has no very direct relation to the total population; but the fact that Scotland is responsible for a number that, in proportion to population, is about five times as great as England's, seems to indicate that, at least proportionally, Scotland plays a greater part in the education of the profession than England does. I am not prepared to discuss the reasons; but it is certain that Scotland does provide a very large part of the medical profession for the Empire and the countries associated with it. This may fairly be interpreted as a testimony to the value of Scotland's teaching contribution to modern medicine. Her great schools are highly equipped in every branch of medical teaching and inquiry. They attract students from the Empire and from many countries outside. The large numbers of Scottish graduates that practise at home or go abroad keep up a constant stream of new students. No schools could succeed in doing this for so long a period if they did not stand on a high plane of equipment and efficiency. I may add, as a modification, that many students may train in England and Ireland and graduate in Scotland, just as many Scottish students may train in Scotland and graduate in England. But, with every modification, the facts are somewhat striking.

MEDICAL RESEARCH.

The researches carried out by Scottish investigators in Scotland constitute an important proportion of the Medical Research Council's output. The Council has established a large number of committees, each in charge of a group of medical problems. These committees include representatives from all interested schools in the United Kingdom, and Scotland has its share. Apart, however, from the Medical Research Council, other research work is carried on for Scottish problems as such. Certain preliminary investigations have been made of rickets and other subjects are under active consideration. Here emerges a somewhat important principle. Should research be dissociated from teaching? In some countries research and teaching are wholly separate and, to a certain extent, this is true in Scotland. But in our Universities the custom has been for the teaching professors to continue researches in their own subjects and also to teach. Speaking generally, all the medical professors and their assistants engage steadily in the investigation of the current problems. One of them has said to me that the maintenance of research in his department gives greater interest and vitality to his teaching and he engages in research because he wishes himself to keep abreast of medical discovery and because it enables him to teach better. This aim tends to keep research practical and to keep practical teaching vitally scientific. But there is room for development here as in other aspects of medicine.

Some years ago an institute was built at Bucksburn, near Aberdeen, for the study of animal nutrition—the Rowett Institute, so named after the generous founder. Two years ago an experiment on a large scale was conducted on the dietetic value of milk and milk products. Groups of children of given ages in elementary schools in Scotland were fed with milk over a period long enough to yield stable results. The effects of whole milk, separate (or skim) milk, and an equivalent amount of biscuit, all as a supplement to the ordinary diet, were worked out statistically. It was found that growth in height and in weight was materially stimulated by the extra ration of milk, but not by the biscuit. The experiment was repeated in a second year and the results were confirmed. At the present moment an experiment of the same kind is proceeding. It involves 20,000 school-children. Like the previous experiment, this is under the general direction of Dr. John Boyd Orr, Director of the Rowett Institute. The details have been arranged through the Department for Scotland. The finance has been provided by the Empire Marketing Board. So far as I am aware, these large-scale experiments in the feeding of school-children in school conditions are exclusively Scottish. It may be added that, in the final report of the first experiment, the diet of some hundreds of families will be found analysed in detail.

SCHOOL HEALTH ADMINISTRATION.

These school researches lead, naturally, to the problems of School Health Administration in Scotland. In 1903 the Royal Commission on Physical Training (Scotland) issued its report, and included two special investigations of random samples of Scottish school-children. The revelations made in these special reports at once excited the interest of Parliament. The Commission definitely recommended systematic medical examination of school-children. In the same year an Inter-Departmental Committee was appointed to report on the larger question of physical deterioration. This committee confirmed the Scottish Commission's report. Later a Scottish Education Bill was prepared and included a clause on medical inspection; later still another bill was prepared; but it was not till 1907 that England obtained powers to examine; and in 1908 Scotland was empowered to require the School Authorities to make a medical

examination of all school-children and to treat necessitous children. A system of School Health Administration, including school clinics, was rapidly organised under these powers. The results to-day are impressive. In the report by the Scottish Board of Health for the year 1928 it is stated that of the 325,440 children attending the 3389 State-aided schools in Scotland some 386,194 were medically examined and treatment was provided for those needing it. The system, starting from almost nothing in 1908, now is carried out by a large number of part-time and whole-time medical officers and school nurses. In this section of work Scotland may fairly claim to have made an independent start. The chief impulse, undoubtedly, came from two members of the Royal Commission—namely, the late Sir Henry Craik, M.P., who was at that date Secretary for the Scottish Education Department, and the late Sir Alexander Ogston, who was the only medical member. A unanimous report resulted.

[After detailing the pioneer work done in Scotland in the control and treatment of tuberculosis the lecturer continued :—]

HOUSING.

The Royal Commission on Scottish Housing was set up in 1912 and issued its report in 1917. Members of the Commission visited every county of the mainland, and also the main groups of islands ; the Orkneys, the Shetlands, and the Inner and Outer Hebrides. The chief recommendation was that an explicit obligation should be placed on the local health authorities to survey the housing of their districts, and themselves to build houses where these were not otherwise provided in adequate numbers. This was the one really new proposal. It was, in principle, a departure of the first magnitude. In 1919 it was embodied in an English Statute as well as in a separate Scottish Statute. Several acts have been passed since then, but the obligation on the local authorities remains. The Commission recommended that some 235,000 houses were needed for Scotland. At date, if we include all houses subsidised by the State, the number actually built since 1919 or in process of building is now over 122,000. There is still a long road to travel, but in this new departure Scotland took a lead of her own. A generation or more must elapse before the effects on the general health can be fairly tested statistically, but all authorities are agreed that the good housing of the people is an essential to the general promotion of health, which is another name for preventive medicine.

HIGHLANDS AND ISLANDS MEDICAL SERVICE.

A special Act of Parliament has sanctioned an annual grant for the provision of an adequate medical and nursing service for the Highlands and Islands. The system stands alone of its kind in Great Britain. It has been explicitly recognised as the inspiration of the Frontier Nursing Service in the Appalachian Mountains of Kentucky, and full information has, on request, been furnished also to the authorities of Newfoundland, the Province of Ontario, and areas in South Africa. Over £600,000 were expended in the first 14 years in subsidising doctors and nurses, in the provision of doctors' and nurses' houses, subsidising hospitals, appointing of resident operating surgeons in selected centres, and other elements of a medical service.

TOXIC EFFECTS OF ETHYLENE OXIDE.

THE results of an investigation of the response of guinea-pigs to ethylene oxide made by C. P. Waite, F. A. Patty, and W. P. Yant, of Pittsburgh, have been published by the United States Public Health Service.[1] The object of the work was to estimate the hazards involved in exposure to certain chemical products which have recently reached, or promise to reach, important domestic and industrial use, and of which ethylene oxide is an example. The uses to which it is at present put are as intermediate in the synthesis of compounds such as methyl, ethyl, and butyl cellosolve, and as a fumigant, either alone or mixed with carbon dioxide, in which capacity it acts by stimulating the respiration of insects. The authors found that guinea-pigs exposed to the vapour showed, first, signs of nasal irritation, as indicated by scratching at the nose, ocular irritation with lacrymation and squinting, and later blood-tinged, frothy serous exudate from the nostrils, unsteadiness and staggering ; finally, the animals were unable to stand, respiration increased in rate and amplitude, until a state of gasping dyspnœa was reached accompanied by the use of accessory muscles and raising of the head ; death followed. Guinea-pigs exposed to 1·4 per cent. concentration fell and lay on their sides in 50 to 107 minutes, while exposure to 0·7 per cent. caused all animals to fall in 150 minutes. The first effect of higher concentrations—8·5, 6·4, and 0·7 per cent.—was to increase the depth and amplitude and to slow the rate of respiration in 13, 17, and 35 minutes respectively. With exposure to smaller concentrations, such as 0·13 and 0·06 per cent., irritation of the eye and nose were the principal symptoms, while with 0·025 per cent. no distinct symptoms were observed. Pathological examination of the animals which died as a result of exposure, either within a few hours or after several days, showed the presence of a marked irritation of the respiratory system, with the super-imposition, in the animals which died late, of lobar or lobular pneumonia and parenchymatous changes in the kidney. The observers conclude that in the case of guinea-pigs 0·3 to 0·6 per cent. for 30 to 60 minutes is dangerous to life, 0·3 per cent. is the maximum for 60 minutes without serious disturbance, and 0·025 per cent. is the maximum allowable concentration for several hours without serious disturbance ; 5 to 10 per cent. causes death within a few minutes. In toxicity ethylene oxide is less harmful than hydrogen chloride and sulphur dioxide, more harmful than chloroform and carbon tetrachloride, and similar to ammonia. It has not enough smell to give warning of harmful concentrations, but the distinct irritation of the nose to which it gives rise, even in comparatively safe concentrations, should be taken as warning of a dangerous atmosphere.

[1] U.S. Public Health Reports, 1930, xlv., 1832.

THE CLINICIAN AS PATHOLOGIST.

IN the course of a presidential address delivered to the Manchester Pathological Society on Oct. 8th, Dr. E. Bosdin Leech discussed the development of pathology as a separate science and regretted the specialisation which prevented physicians and surgeons from obtaining an early training in the post-mortem room. Last century, he said, the study and teaching of pathology had diverged along two different lines. In some places its teaching remained in the hands of physicians and surgeons of observing habit who conducted their own post-mortem examinations. Their juniors, who might do the mechanical part of the work and for the time being devote themselves entirely to pathology, were simply laying a scientific foundation for their diagnostic and therapeutic work in the wards and outside. In other places it fell into the hands of specialists, men who were to devote their whole lives to pathology and had no intention of undertaking treatment. Deeper knowledge and the increase of specialties inside pathology itself had now made it necessary for pathology to be carried on by specialists, but Dr. Leech urged that in the pathological departments of our big hospitals some attempt should be made to attract the young physician and the young surgeon to pass part of his waiting period in the post-mortem room. It would be for the good of medicine. Sir Humphry Rolleston had said that no physician has ever recovered from having omitted to serve a long practical apprenticeship in the post-mortem room. Dr. Leech realised that the budding physician and surgeon could not specialise in all the modern branches of pathology, but he must learn

some good old-fashioned morbid anatomy. In England and to a lesser extent in France pathology had in general been taught by the physicians and surgeons. No better example of this type of teaching could be chosen than that of Guy's Hospital. There a series of brilliant men, Bright, Addison, Hodgkin, Wilks, showed what could be done by practising physicians, and the surgeons were in no degree behind them. The specialist type of teaching throve in Germany and Austria; notable examples of great teachers were Virchow, Koch, and Rokitansky. Dr. Leech, reviewing the developments in the middle of the last century, concluded that though the specialist work brought out a greater number of brilliant discoveries, the retention of post-mortem work in the hands of the clinicians produced the better practitioners.

A MASSAGE DIRECTORY.

WE have received a directory of the members of the Chartered Society of Massage and Medical Gymnastics who are in private practice. They have formed a group known as the Private Practitioners' Association to safeguard their interests and have issued a list in order that the medical man or woman may see where to find a member of the C.S.M.M.G., what his/her qualifications are, and what work he/she is prepared to undertake. The directory is intended only for doctors, as members of the Association have voluntarily adopted an ethical code which pledges them to work only under the direction of a registered medical practitioner. As this pledge prevents them from accepting work which might come to them directly, the Association claims with some justice the support of the doctor in utilising the services of its members. The directory, which is on a county basis, gives postal and telephone address as well as the kind of treatments which the member will undertake from massage, medical electricity, diathermy, radiography, colonic lavage, down to foam baths, steam baths and Bergonié treatment. Our only criticism is that the arrangement under counties makes it difficult to find at a glance whether a member of the Association is available in such and such a locality. In another edition we would suggest a further index of towns. A copy will be sent post free to any medical practitioner on application to the Secretary, P.P.A., Hygeia, Falmouth, Cornwall.

SCIENCE DISCIPLINE.

Sir David Prain, I.M.S., F.R.S., chose this subject for the second annual Alexander Pedler Lecture (founded by the British Science Guild) which he gave on Oct. 22nd in the University of Liverpool.

Huxley, he said, held that in an ideal university a man should be able to obtain instruction in all forms of knowledge, and discipline in the use of all methods by which knowledge might be obtained. Science no longer connoted all knowledge, but meant more particularly "natural knowledge." Science discipline, therefore, implied cultural exercise of every method by which natural knowledge could be obtained, as contrasted with science training, which implied technical exercise in any method by which natural knowledge might be employed. The sole object of science training was to make an adequate number of scholars, already disciplined in the requisite natural knowledge, competent to give the general community effective, scientific help. The purpose of discipline was two-fold: on the one hand to furnish those who wished to serve the community scientifically with the kind of natural knowledge that would enable them to profit by training for technical efficiency; and on the other hand, to render all scholars in any ideal university competent to appreciate the scientific help afforded the community by those specially trained to give it.

It needed the lesson of the Great War to convince our legislators of the truth that "what people call applied science is nothing but the application of pure science to particular problems," and an Association for the advancement of science had to reach its hundredth year before it found a president courageous enough to say that between pure and applied science there was no real distinction. There was room for hope that academic opinion might now cease to consider second-rate advancement more important than first-rate application of natural knowledge. General cultural science discipline was the proper business of faculties of arts, not of science. A special scientific discipline, preparatory to technical training, also had its place within the universities, and demanded recognition and special organisation. Sound practical instruction in the elementary facts and broad principles of biology should form part of the arts curriculum. The absence of any serious attempt on the part of those entrusted with university organisation to devote themselves to the "patient study of scientific teaching" in their faculties of arts, was directly responsible for much of the justifiable disquietude felt by both teachers and scholars of natural knowledge to-day. It was of less consequence for teachers of science to fail to distinguish between the functions of a technical and a cultural faculty, than to fail to make their universities understand the difference in method between the science discipline for culture and the science discipline that prepared for training.

SMALL-POX AND THE PUBLIC.

To the Editor of THE LANCET.

SIR,—The modern attitude towards small-pox is here exemplified. A school-teacher in Bethnal Green had nine children away one recent Monday. By Friday eight were reported to be small-pox victims, but it was not until the following Tuesday that the father of the ninth thus excused the absence of his daughter. I give his exact words:

"Madame and Miss, excuse Amelia being away but she has been under the doctor who could not diagnose her. First she was off her food, very quiet and lifeless, then she was irritable and cross. Her mother thought she was about to become a female, but it was *only* the small-pox after all."

Amelia returned to school very pock-marked and, incidentally, also a "female"!

I am, Sir, yours faithfully,

C. BERKELEY WAY.

BRITISH SPA FEDERATION.

THE manager of Droitwich Spa informs us that although Droitwich has not joined the official scheme for treating insured persons (described on p. 975 of our last issue), it nevertheless belongs to the British Spa Federation, and receives a number of patients belonging to this category from various sources.

"THE THREE-CARD TRICK."

REFERRING to a note under this title in our last issue (p. 1000), Dr. C. W. Hutt points out that Holborn was the first authority to undertake anti-diphtheria immunisation at a maternity and child welfare centre. This work was begun so long ago as 1922.

CONTRIBUTORY PENSIONS LEGISLATION.

A SHORT summary of contributory pensions legislation recently published [1] may help those who wish to verify the claims of prospective pensioners. There is an occasional trace of preoccupation with the Scottish application of the law; thus the Contributory Pensions (References) Regulations (Scotland) of 1925 are specifically mentioned, but not the corresponding English regulations of 1928. The handbook is, however, a useful guide to both the English and Scottish provisions of the principal Act of 1925 and the copious amendments made last year. One such amendment, it may be remembered, lifted the disqualification imposed on inmates of poor-law institutions in a case where a patient has entered the institution merely to obtain medical or surgical treatment.

[1] Handbook of Widows', Orphans', and Old Age Contributory Pensions. By T. P. M'Donald, M.A., LL.B., advocate, and George Davie, B.L., Solicitor. Edinburgh and London: W. Hodge and Co. 1930. Pp. 104. 3*s*. 6*d*.

ADDRESSES AND ORIGINAL ARTICLES

PAROXYSMAL TACHYCARDIA.

The Bradshaw Lecture delivered before the Royal College of Physicians of London on Nov. 4th, 1930,

By W. E. Hume, C.M.G., M.A. Durh., M.D. Camb.,
FELLOW OF THE COLLEGE; SENIOR HONORARY PHYSICIAN TO THE ROYAL VICTORIA INFIRMARY, NEWCASTLE-ON-TYNE; LECTURER IN SYSTEMATIC MEDICINE IN THE UNIVERSITY OF DURHAM.

In selecting paroxysmal tachycardia as my subject I have chosen a common and dramatic syndrome which has been well recognised in its chief clinical manifestations for half a century, and in which renewed interest was aroused when the electrocardiograph was introduced into clinical work about 20 years ago. This renewed interest has resulted in a clearer conception of the mechanism of a paroxysmal attack, though the prime factors of causation are even now completely obscure. The literature has become voluminous, and for the most part consists in the electrocardiographic description of isolated cases or small groups of cases, and a pause to take stock of the accumulated material is my excuse for speaking on the subject, although in a single lecture, and with a personal experience limited to a series of 50 cases, my review must be somewhat fragmentary.

In this country the credit for the first accurate description of an attack of paroxysmal tachycardia is assigned to Richard Payne Cotton,[12] physician to the Brompton Hospital for Consumption. His paper, entitled Notes and Observations upon a Case of Unusually Rapid Action of the Heart (232 per minute), appeared in the *British Medical Journal* in 1867. The patient, a tailor, aged 42, was under Cotton's observation for three years, and in one of the attacks Dr. J. Burdon Sanderson took a sphygmogram which counted the pulsations at exactly 220 per minute. The attacks of rapid heart action started and ended with great suddenness, and in Cotton's words "the action of the heart becoming suddenly in every respect natural and the pulse 80 in the minute." The publication of this case was immediately followed by the description of other similar cases by James Edmonds and by Sir Thomas Watson. On June 15th, 1867, Watson described a case in a middle-aged man "whose waggings of the heart were counted with the stethoscope at the rate of 216." The pulsations dropped suddenly to 72 when the attack ended, with the patient's exclamation, "There, I feel that I am all right again." In the fourth attack the patient died. There quickly followed reports of similar cases by Dr. Brown of Rochester, Dr. Bowles of Folkestone, and Dr. Broadbent, who described a typical case in a woman of 66 in St. Mary's Hospital. These accounts make it clear that their authors recognised the clinical syndrome which we now designate paroxysmal tachycardia. In 1882 Probsting[32] described three cases which had come under his own observation, and reviewed reports of similar cases from the literature. The first complete account of the condition was given by Bouveret[7] in 1889, and he named the disease *tachycardie paroxystique essentielle*. Little of clinical moment has been added to his exhaustive account, and on the Continent the syndrome is still often referred to as Bouveret's disease. In 1897 Herringham[32] reviewed 53 cases in the *Edinburgh Medical Journal*, together with an account of a typical example in a girl of 11 years under his care. At that time there could be no conception of the cardiac mechanism during the attacks of paroxysmal tachycardia. The teaching of James Mackenzie and the use of his ink polygraph stimulated renewed research in all forms of cardiac arhythmia, including the tachycardias, and an analysis of the cardiac mechanism was attempted. A more accurate analysis became possible with the advent of the electrocardiograph into clinical work, and the experimental and clinical researches of Engelmann, Lewis, and others eventually placed tachycardias on a physiological basis.

Electrocardiographic and experimental research has suggested that paroxysms of tachycardia may be generated at different levels in the heart—auricles, ventricles, and junctional tissues—and clearly defined types are recognised.

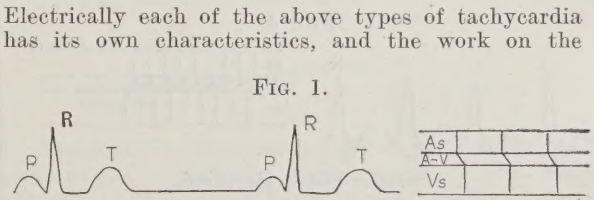
Types of Tachycardia.

There appear to be three rhythmic centres in the heart, each capable of generating rhythmic impulses. (1) The normal pacemaker of the heart lies in the sino-auricular node situated in the sulcus terminalis of the right auricle, dominating the other centres and sending out rhythmic impulses at the rate of 70–80 per minute. (2) A second centre lies in the auriculo-ventricular node (Tawara) and main bundle (His) of junctional tissues capable of generating impulses at a somewhat slower rate. (3) A ventricular centre which generates impulses at the rate of 30–40 beats per minute when the two higher centres are cut off from it or are in abeyance. The centre with the higher rate of impulse formation will always impose its dominance over the other centres, and though the above rates represent the natural speed of impulse formation, each centre is capable of generating impulses at an enormously higher rate. Under certain circumstances each centre may be so excitable that it becomes capable of sending out impulses at a regular and excessive speed which will then dominate the situation. This is the essence of paroxysmal tachycardia, and as each centre is capable of becoming the dominant pacemaker we can classify the tachycardias as follows:—

(1) Auricular:
  (*a*) Regular auricular tachycardia.
  (*b*) Auricular flutter.
  (*c*) Paroxysmal attacks of auricular fibrillation.
(2) Auriculo-ventricular (nodal):
  (*a*) Superior nodal.
  (*b*) Inferior nodal.
  (*c*) Nodal.
(3) Ventricular.

Electrically each of the above types of tachycardia has its own characteristics, and the work on the subject of paroxysmal tachycardia during the last 20 years has been chiefly the electrocardiographic study of individual cases. The result has been to show that the electrocardiographic record during an attack of paroxysmal tachycardia will usually demonstrate the level in the heart at which the abnormal rhythm is being generated (Fig. 1).

FIG. 1.

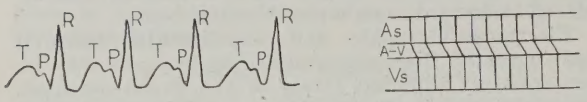


Normal.

AURICULAR TACHYCARDIA.

If the tachycardia is generated in the neighbourhood of the sino-auricular node the auricular electrical complex will have a normal appearance and P will be upright. The impulse will pass to the ventricles by the normal paths and the time of passage (P–R interval) will approximate the normal. The R wave of the ventricular complex will be sharp and characteristic of the supraventricular type (Fig. 2). If the auricular speed is very excessive—e.g., 300—the ventricles may be only able to respond to a certain

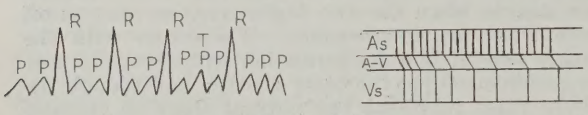
FIG. 2.



Auricular tachycardia.

proportion of the auricular impulses, and this type constitutes auricular flutter. In regular auricular tachycardia the auricular and ventricular rates are the same and vary from 140–250, and remain fairly constant in individual cases. Compression of the vagus in the neck is frequently efficacious in arresting an attack. On the other hand, in auricular flutter vagal compression may slow the ventricular speed temporarily, but this procedure has never been known to arrest an attack (Fig. 3).

FIG. 3.



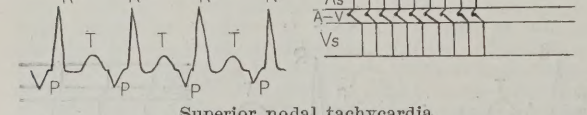
Auricular flutter.

NODAL TACHYCARDIA.

Nodal tachycardia, first described by Hering and Rihl and elaborated by Lewis,[50] with its three subdivisions, is the most common mechanism in regular paroxysmal tachycardia; the subdivision is not solely theoretical, because the varying relationship of P to R in electrocardiograms makes it apparent that the excitable centre may lie in different levels of the auriculo-ventricular node and bundle (junctional tissues).

(*a*) *Superior nodal.*—Electrically, this type is characterised by an inverted P which appears immediately anterior to R, which is sharp and of the supraventricular type. The electrocardiogram

FIG. 4.

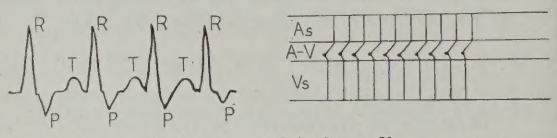


Superior nodal tachycardia.

suggests that the excitable centre lies in the upper part of the junctional tissues, and the wave of excitation, spreading towards auricles and ventricles, excites the auricles first (Fig. 4).

(*b*) *Inferior nodal.*—Conversely, P may appear immediately after R and usually notches the downstroke of R, which in its general contour is of the supraventricular type. In the inferior nodal type the electrocardiogram suggests that the excitable centre lies in the lower part of the junctional tissues and the wave of excitation, spreading towards auricles and ventricles, excites the ventricles first (Fig. 5).

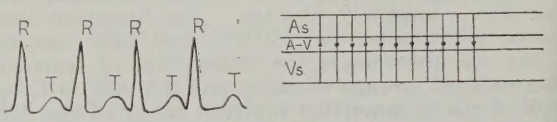
FIG. 5.



Inferior nodal tachycardia.

(*c*) *Nodal.*—If the excitable centre lies midway between auricles and ventricles and the wave of excitation passes simultaneously upwards and downwards, there will be simultaneous contraction of auricles and ventricles, with the result that P and R will coincide. In this type there is a single biphasic deflection with the characteristics of a supraventricular R (Fig. 6).

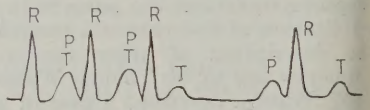
FIG. 6.



Nodal tachycardia.

Before mentioning the last variety (ventricular) it must be admitted that the classification of some electrocardiograms, characterised by a sharp biphasic R and obviously supraventricular, present difficulties in interpretation. When P falls before R in the superior nodal variety it is usually clearly defined and unmistakable. There is not, however, the same certainty in the recognition of P when it falls after R, and notches on the downward deflection of R might be variously interpreted by different observers. Similarly, when there is no evidence of P apart from R and T deflections, there is no certainty that P is buried in R—i.e., truly nodal; P may lie in the previous T denoting an auricular tachycardia. Frequently a study of the deflections at the beginning or end of a paroxysm may give the clue to the interpretation of the electrocardiogram. For instance, the form of T of the last beat of the paroxysm will show whether P has been superimposed upon it during the paroxysm (Fig. 7).

FIG. 7.



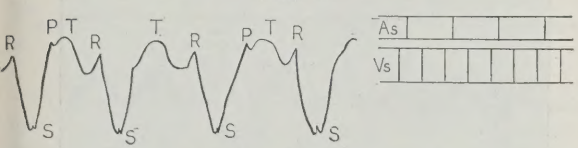
Auricular tachycardia?

However, both in those examples where P is separate and distinct and in those in which the position of P may be in doubt the R deflection is essentially of the supraventricular type and all might be classified as "supraventricular tachycardias." There seems to be evidence that the majority of electrocardiograms from cases of regular paroxysmal tachycardia present the features of a supraventricular type, and in the present state of our knowledge the more subtle subdivisions are of more academic than practical interest. For instance, there is no clinical distinction to be recognised between auricular, superior, and inferior nodal and nodal types, and no deductions can be drawn as to prognosis and treatment between a paroxysmal tachycardia of obvious auricular origin and another of obvious nodal origin.

VENTRICULAR TACHYCARDIAS.

It is otherwise, however, in the case of the last variety—ventricular tachycardia. Since Lewis, in 1909, published an electrocardiogram of ventricular tachycardia many electrocardiograms have been published which purport to show that the paroxysm has arisen in one or other ventricle. In this type the ventricular complexes have the characteristics of extrasystoles from right or left ventricle—namely, broad R and S deflections continued into a large broad T. Independent auricular deflections P can sometimes be identified amongst the ventricular deflections at a slower rate than that of the ventricles (Fig. 8).

FIG. 8.



Ventricular tachycardia.

In the interparoxysmal normal periods premature ventricular beats are apt to occur, with complexes similar to those constituting the paroxysm. Frequently it can be shown that the onset and end of the paroxysm bear the same relation to the slow rate as do the premature extrasystoles to the normal beats. There is also often a slight irregularity in the paroxysmal rate. This type of tachycardia is more frequently associated with the severer forms of heart disease and more especially with thrombosis of the coronary arteries. In 65 cases collected by Strauss[77] there was clear evidence of heart disease in 53, including 12 cases of coronary thrombosis.

Many of the recorded cases of ventricular tachycardia have had large and continued doses of digitalis, and it has been suggested that ventricular tachycardia is a toxic manifestation of digitalis in the presence of organic heart disease.

Though rare, apart from its association with gross organic heart disease, ventricular tachycardia has been described in the young and in those without any obvious heart disease, but these exceptions are scanty.[47 73] As in the case of some electrocardiograms indicative of supraventricular tachycardia there may be some uncertainty in the interpretation of apparent ventricular electrocardiograms. Certain curious electrocardiograms show bidirectional alternation of ventricular complexes[61 72] suggesting that foci in both ventricles alternately send out rhythmic impulses. These occurred in 18 out of 64 cases quoted by Strauss.[77] This appearance, however, may be otherwise explained, by presuming that the right and left branches of the bundle of His are alternately refractory and that supraventricular impulses travel alternately down one or other branch. Whatever the explanation for the bizarre appearances this type of electrocardiogram also occurs in the subjects of gross organic heart disease.

In spite of the limitations of electrocardiographic analysis the large majority of electrocardiograms from cases of regular paroxysmal tachycardia can be placed in the categories of either supraventricular or ventricular types, and we must now consider their relative frequency and the clinical facts and associations common to both varieties or peculiar to each type.

Though it is the rule that the type of paroxysm always remains constant to the individual patient there are examples of mixed types. For instance, Crawford[13] has described attacks in a medical student, aged 25 years, where during the attack the exciting centre seemed to shift from the sino-auricular node, with a rate of 181, to the auriculo-ventricular node, with a rate of 175. Barker[3] has described a case of auricular paroxysmal tachycardia which was interrupted by an attack of ventricular tachycardia; and other combinations have been described.[17 33]

During an attack of supraventricular tachycardia partial heart-block or a bundle branch block may become evident in the electrocardiogram and upset a previously regular rhythm.

In spite of these and similar irregularities the type usually remains constant to the individual, and in the supraventricular varieties the same type of attack is continued year after year. I have electrocardiograms of some patients taken over 15 years, and the records from year to year are essentially identical. In a single lecture some limitation must be placed upon the range of tachycardias to be surveyed, and I propose to deal chiefly with those regular supraventricular tachycardias which are repeated in patients year after year. Paroxysms of auricular fibrillation and auricular flutter will only be mentioned in as far as they confuse diagnosis or differ in treatment.

Paroxysmal and permanent auricular flutter was fully described by Parkinson and Bedford[62] in 1927, and both have considerable affinities with auricular fibrillation, in itself a very large subject.

INCIDENCE OF THE TYPES.

From the inherent nature of the syndrome and its irregular appearance it is only possible to obtain electrocardiographic records in a small proportion of our cases of regular paroxysmal tachycardia, and I have electrocardiographic records of 24 patients, though I have full notes of 50 cases, most of whom I have seen in attacks, and I have encountered other undoubted examples of which I have only a recollection and nothing in writing. Table I. shows the incidence in the various groups, and it is apparent that the largest incidence falls in the supraventricular type.

TABLE I.

—	Auricular.	Sup. nodal.	Inf. nodal.	Nodal.	Indeterminate but supraventric.	Ventric.	Total.
Cowan ..	1	—	—	14	—	—	15
Hume ..	1	1	1	18	1	2	24
Gallavardin (1930) ..	5	2	14	—	5	1	27
Willius and Barnes..	7	5	3	28	—	6	49
Ritchie*	26	—	—	40	26	46	138
	40	8	18	100	32	55	253

* 1926 collected.

Supraventricular .. .. .. 198 = 78·3 per cent.
Ventricular .. .. .. 55 = 21·7 „ „

The figure 55 representing the ventricular type of paroxysms is probably excessive and requires comment. It includes examples of short runs of ventricular tachycardia which have been described as salvoes of extrasystoles—in one case a run of 8 beats and in another a run of 13 beats.[69] These have been found on systematic electrocardiographic examination of the heart in patients suffering from gross organic heart disease. In some instances again the ventricular paroxysm was a terminal event, as four-fifths of 50 cases with ventricular tachycardia described by Strauss died within periods varying

from three hours to six months after the onset of ventricular tachycardia, with an average of 24 days. For these reasons it is thought that the proportion of ventricular to supraventricular tachycardia is exaggerated in the table and cannot amount to more than 20 per cent. of all forms of paroxysmal tachycardia. In those who are subject to attacks of paroxysmal tachycardia extending over years a supraventricular type will usually be demonstrated by the electrocardiograph, in which the nodal type predominates.

General Symptomatology.

The attack.—It is unnecessary to dwell at any length on those well-known characteristics of paroxysmal attack which are common to all varieties of paroxysmal tachycardia, at whatever site the paroxysm is generated. The abrupt onset and the equally abrupt termination of the attack distinguish this syndrome from any other form of palpitation.

Prodromal symptoms are usually conspicuously absent, and the patient is taken completely unawares. Gallavardin and Froment [24] quote the case of a man, aged 48, who for two days before an attack had an exceptional feeling of well-being, and a woman of 52 years who was warned by an exceptional thirst. In another woman the attack appeared within the three days preceding the onset of menstruation, in whom when pregnant the attacks continued to appear each month at similar dates. Prodromal warnings have not occurred in any of my patients.

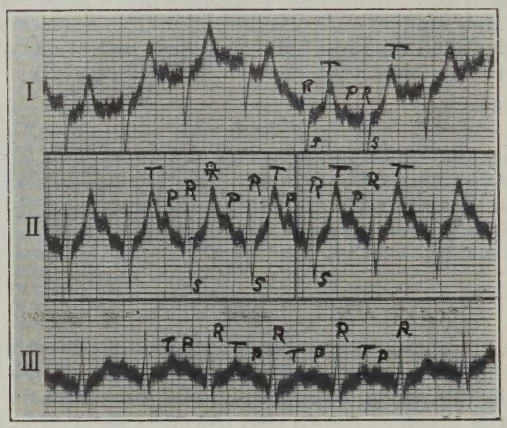
Exciting cause of the attacks.—In most patients the attack sets in without warning and without a definite exciting cause, sometimes even during complete relaxation and rest. In a few there are exciting causes which the patient learns to avoid; prolonged physical effort, such as playing football, would with certainty produce an attack in one of my patients, and in another quick walking after a heavy meal would invariably produce an attack. The bending movement required to put on shoes is particularly prone to produce a paroxysm, and nearly all patients avoid this by standing and putting a foot on a chair. In one of my patients who has only had four attacks in four years the attack seemed to be induced on two out of the four occasions by the enforced holding of the breathing during the excessive effervescence of a Seidlitz powder. In some nervous patients the original first attack of paroxysmal tachycardia may have had an unusual emotional cause; for instance, one patient was terrified by the bursting of a thunderbolt within a few yards of her and the heart immediately broke into a first attack of tachycardia; a boy caught stealing apples and a girl frightened by a dog jumping at her throat were both suddenly seized with their first attacks, to be repeated without apparent cause through the years to come. Goodman and de Graff [28] quote a curious case of a girl, aged 13, with advanced rheumatic heart disease in whom pressure over the heart caused a sudden quickening of the ventricular rate to 170, while the auricles continued to beat at 80 per minute.

Observations During an Attack.

When an attack is launched various observations may be made on the patient's general condition, and on the condition and behaviour of individual organs and systems.

The rate of the heart is of interest in all cases. In all forms of tachycardia the ventricular speed usually lies between 150 and 260, figures below and above these limits being comparatively few. A regular ventricular speed in the neighbourhood of 180–200 would always suggest a regular tachycardia of abnormal supraventricular or ventricular origin. Prolonged and regular ventricular rates of approximately 150 are compatible with a 2 : 1 auricular flutter, indicating an auricular speed of 300. The rate during an individual attack of paroxysmal tachycardia remains fairly constant during that

Electrocardiogram 1.



Auricular tachycardia. Rate = ca 165.

attack. At the instigation of Lewis, Feil and Gilder [20] found that the variation was less than 0·01 second in eight cases of various regular tachycardias, though slight differences, such as 180–184 and 204–210, are frequent. In prolonged seizures there may be greater variation in speed. Marvin [55] noted the gradual slowing of rate from 172 to 124 during five days, and Ritchie [69] noted that a rate of 190 fell to 120 a few hours before death without any change in the tachycardic mechanism. The last observer found in one patient that the rate was quicker when the patient was lying down (228) than when standing up (214). Excessive rates are rare; Langley [40] quotes the case of a boy of 14 years whose ventricular rate was 300.

The heart.—It is primarily important to ascertain if there is any evidence of organic disease of the heart and the cardiovascular system, and a final opinon may be impossible during the attack. It may be convenient at this stage to assess the incidence of organic heart disease in those subject to attacks of paroxysmal tachycardia. Gallavardin and Froment,[24] analysing 177 cases of supraventricular tachycardia, came to the conclusion that there was no evidence of organic cardiovascular disease in 110; in other words, that the examination of the cardiovascular system both during attacks and in normal periods was completely negative in nearly two-thirds of their cases. From a study of the literature it must be confessed that a true estimate of the incidence of organic cardiovascular disease is not always easy. It is often difficult to be certain of the exact type of paroxysmal attack contained in the analysis, and it is essential to separate the supraventricular from the ventricular types, as the latter are much more closely associated with organic heart disease than are the supraventricular types. Other authors put the proportion of organic cases at a lower figure; Hoffmann, Huchard, Chauffard, Mecklen, and Vaquez (quoted by Gallavardin and Froment) estimate that only one-fifth of all cases have organic disease. My own figures show that in patients, whom for the most

part I have been able to follow for many years, there was no evidence of cardiovascular disease in 30 out of a total of 48 with supraventricular tachycardias. Table II. shows the type of cardiovascular disease associated with supraventricular tachycardia.

TABLE II.

Own Cases.			*Gallavardin and Froment.*		
Rheumatic valvular disease	1		Valvular lesions	27	
Syphilitic aortitis	2		Hypertensive cases	34	
Diphtheria (acute)	1		Various heart lesions	6	
Diphtheria (sequel)	1			67	% (37·8)
Arterio-sclerosis	6				
Myocardial degeneration	7				
	18	% (37·5)			
No cardiovascular lesion	30	(62·5)	No cardiovascular lesion	110	(62·2)
	48			177	

It is very different, however, when inquiry is made into the incidence of organic heart disease in patients who are subject to attacks of ventricular tachycardia. Strauss[77] has analysed the histories and cardiovascular states of 64 patients who were subject to attacks of ventricular tachycardia and in only 11 was there *no* evidence of cardiovascular pathology. Table III. shows the varieties of cardiovascular disease discovered in 53 out of 64 patients:—

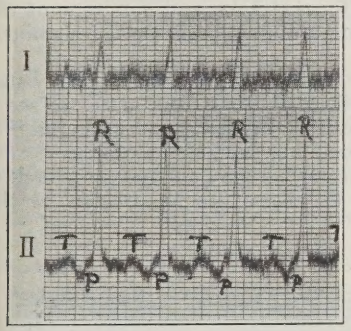
TABLE III.

Cardiovascular hypertensive disease	16
Coronary disease	12
Rheumatic heart disease	8
Arterio-sclerotic heart disease	4
Syphilitic heart disease	4
Thyrotoxic ,, ,,	2
Type of heart disease not clear	7
	53

It seems to be a fair deduction from these tables that no evidence of cardiovascular disease will be found in two-thirds of patients with supraventricular tachycardia and that cardiovascular disease *will* be found in four-fifths of patients with ventricular tachycardia. Certain observations have been made on the *alteration in size of the heart* during the attack. Wenkebach observed that there was no dilatation, whilst Vaughan (quoted by Miller, Smith, and Graber[57]) estimated an increase of 1 cm. and Wilson [84] an increase of 2·5 cm. during attacks observed by them. Stewart and Crawford[76] studied the effect of regular and irregular tachycardias on the size of the heart by means of the X ray shadow. The experiments were conducted on normal anæsthetised dogs and they came to the following conclusions: (1) during regular tachycardias there was a decrease in the size of the heart; (2) that in auricular fibrillation the size was unchanged or increased.

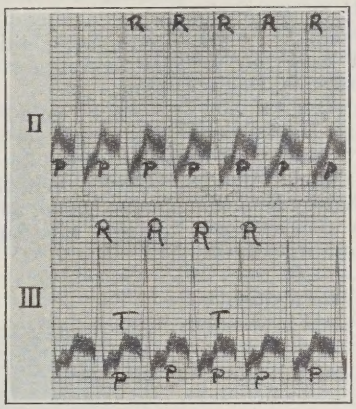
When attacks are prolonged up to four and five days there is often gross clinical evidence that the apex has moved outwards, and this is especially likely to occur in those patients with accompanying organic lesions. In a patient of my own, a boy of 17 years, who had fibrous myocarditis (post mortem) after an attack had lasted three days the apex moved outwards and there were obvious signs of congestive failure in the lungs with oliguria. The appearance of these signs is very uncertain and an attack may last for several weeks without the appearance of any sign of congestive failure, and in this respect much depends on the presence or absence of organic heart disease. It has often been noted that organic heart murmurs present in normal intervals disappear during an attack of tachycardia.

Electrocardiogram 2.



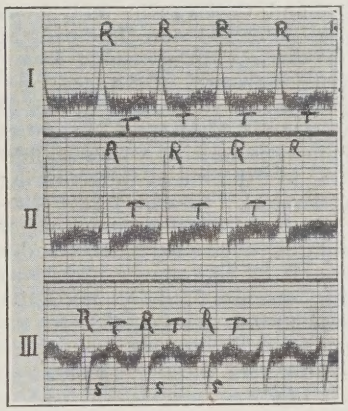
Superior nodal tachycardia. Rate = 187.

Electrocardiogram 3.



Inferior nodal tachycardia. Rate = 200.

Electrocardiogram 4.



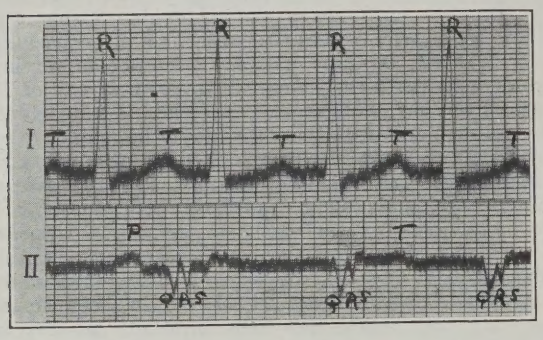
Nodal tachycardia. Rate = ca 170.

Pain of an anginal character occurs infrequently. Willius and Barnes [5] recorded severe chest pain in 5 per cent. of 380 cases and Gallavardin and Froment[24] in one-seventeenth of 177 cases. In many the pain did not occur until the later attacks in a patient's life and usually after an attack had lasted many hours. In one of my patients it occurred after an attack had lasted five hours and that attack had been preceded by a particularly fatiguing and anxious day. It required morphia for its relief, which brought about sleep, and when the patient awoke the attack had ended. In my private patients chest sensations, varying from oppression to actual chest pain, with pain or numbness in the arms, is more common than in hospital patients and there were definite chest discomforts in 16 per cent.

Blood Pressure.—(*a*) Arterial pressure usually falls during an attack. A pressure varying between 165/100 and 190/115 in the inter-paroxysmal period fell to 130/95 during an attack (Hirschfelder, quoted by Miller, Smith, and Graber[57]) and in another patient there was a fall from 190/115 to 95/85 during an attack with a ventricular rate of 200 (Willius, quoted by Miller, Smith, and Graber[57]). There seem to be several causes for the fall of arterial blood pressure: (1) The shortened diastole causes a diminished systolic

output; (2) the contractile power of the ventricles is lessened by the shortened diastole; (3) the simultaneous contraction of auricles and ventricles in nodal tachycardia would tend to diminish the output from the ventricles. On rare occasions the blood pressure

Electrocardiogram 5.



Nodal tachycardia. Lead I. shows the paroxysm. In lead II. the first complex shows normal rhythm, the other two the onset of a paroxysm; the QRS complexes are common to both. Rate = ca 187.

rises and Gallavardin and Froment[24] quote a rise from 120 to 160 mm. Hg during an attack.

(*b*) Certain observations have been made on the venous pressure. In a case of paroxysmal tachycardia with a ventricular rate of 220 the arterial blood pressure fell from 135/85 to 120/110 mm. Hg, and the venous pressure rose from a normal of 105 mm. of water to 210 mm. of water during an attack (Hooker and Eyster).[34] Similarly, in a case quoted by Kroetz[39] in which there was a heart rate of 220 with cyanosis, dyspnœa, liver enlargement and albuminuria, during the attacks the venous pressure rose to 160 mm. of water and was found to be 50 mm. of water after the cessation of the attack. In paroxysmal auricular fibrillation the venous pressure rose from 80–90 mm. of water and the ventricular rate increased from 84 to 108 (Eyster and Middleton).[19] Eyster[18] concludes, "that venous pressure may or may not rise in paroxysmal tachycardia and paroxysmal auricular fibrillation depending upon whether or not cardiac incompetence supervenes."

Blood gases.—Barcroft, Bock, and Roughton[2] have summarised the changes in the blood gases as follows: (1) there is a marked decrease of arterial oxygen saturation without demonstrable pulmonary congestion; (2) there is a low CO_2 content of arterial blood during the paroxysm; (3) there is a very low oxygen saturation of venous blood, part of which they attributed to anoxic anoxæmia due to slowing of the circulation; (4) there was a greatly increased coefficient of utilisation during the paroxysm indicating a very slow circulation-rate; (5) there is a decrease in vital capacity immediately following the paroxysm.

The patient's tolerance of the attack varies a good deal and the varying degrees of discomfort experienced by different patients is inexplicable. I have gone into the question with 34 of my patients who have been under observation for many years and the degrees of discomfort and distress in each attack are very constant to the individual. The results may be summarised as follows:—

Severe (prostration)	11
Moderately severe (necessitating recumbency) ..	15
Trivial (able to go about)	8
	34

Though most patients prefer to rest, and to sit rather than to lie, there are those who can move about quite freely. One of my patients, at the age of 60 years, who had suffered from attacks for 25 years, was able to walk up one of the steepest banks of our district in the full flood of an attack. The commonest complaints are of giddiness, faintness, exhaustion, and in some absolute prostration. The rapid and violent beating of the heart distresses the patient considerably and after the attack there is usually a feeling of exhaustion.

Occasionally *nervous symptoms* may be dominant and Barnes[4] quotes 15 cases, of whom ten were males, where the nervous manifestations were prominent, and Table IV. shows the type of nervous derangement:—

TABLE IV.

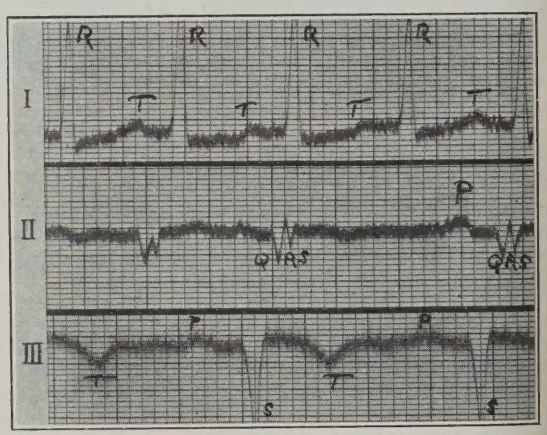
Vertigo	8
Temporary blindness	6
Falling but no loss of consciousness	5
Syncopal attacks	4
Epileptiform seizures	2

These symptoms were interchangeable amongst the 15 patients. Ritchie[69] states that nervous symptoms were marked in 15 out of 104 cases. Wilson[84] quotes the case of a man aged 38 years subject to attacks of auricular paroxysmal tachycardia which would sometimes last eight days, in whom during different attacks there occurred aphasia, hemiplegia, epileptiform attacks, and gangrene of the left arm necessitating amputation below the shoulder-joint.

Some would seem to suggest that paroxysmal tachycardia is an allergic disease and claim to see a relationship between it and asthma and migraine.[42 79] I have not encountered any such associations.

The *actual termination* of the paroxysmal attack is abrupt, but before the complete restoration of the

Electrocardiogram 6.



Nodal tachycardia. Lead I. shows the paroxysm, which ceases at the last complex of lead II. Lead III. is the normal rhythm. Rate = ca 160.

normal rhythm there may be some irregularities, and the following are the chief mechanical modes of ending:—

(*a*) Abrupt transition from the attack to the normal rhythm.

(*b*) The last beat of the paroxysm is followed by the appearance of ventricular extrasystoles, either singly or in salvoes.

(*c*) The last beat is followed by a series of slow pulsations with a negative P in the electrocardiogram.

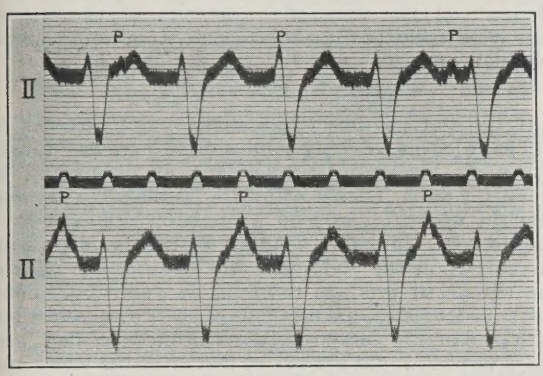
(*d*) A slow nodal rhythm succeeds the paroxysm for a few seconds. After the paroxysm the normal rate is usually

somewhat quickened before it settles down to the normal for the individual. The method of termination is not always constant in the same patient.[24]

Frequency and Duration of Attacks.

There is the greatest variation in the frequency with which patients are liable to have attacks. I have come across undoubted examples of a single attack

Electrocardiogram 7.



Ventricular tachycardia. Rate = ca 150.
(Dr. John Parkinson's case.)

n a lifetime. I saw such an attack in a child 21 years ago who has never had a second attack. When nembers of our profession describe in their own persons a typical attack, with abrupt onset and offset, here can be no question of wrong diagnosis, and I have come across two instances of single attacks in doctors. f an individual experiences a single attack and there s no recurrence he assumes it to be an unusual palpitation, and if it never recurs he does not seek medical dvice and may never mention to anyone his soon orgotten experience.

In those subject to repeated attacks the frequency aries greatly. At first the intervals between attacks nay be long, and later in life they may become much hortened. A man of 70 years had 34 paroxysms in 7 days lasting from 8 to 14 hours and then only had hree attacks in five months (Corney). One of my atients since 1922 has had about 100 attacks each ear. Many have had frequent attacks over a period f two to three years and then have had long intervals ith few attacks, and I have been unable to find any xplanation for the variation. The frequency of ttacks is often in inverse ratio to the length of the ttacks, and the longer the preceding attack has been ne longer will the patient wait for the next attack. here is no doubt also that the liability to attacks may ompletely disappear. In two of my patients there ave been no attacks for seven to eight years although ney had been frequent in the previous four years.

The *liability to attacks* may extend over the whole a lifetime and one of my patients has had infrequent ttacks for 52 years, though the average duration in 2 of my cases was 15½ years. The repeated attacks pose no lasting disability on the heart and my atient, a busy doctor, subject to attacks for 52 years, as to-day a cardiovascular system perfectly normal r his years. Cowan tells me of a patient under his re for many years, who was subject to attacks from e age of 18 years to his death at the age of 75—57 ars—who was a busy member of the legal profession, ached the Bench, and made speeches in the House of ommons in the full flood of a paroxysm.

The length of individual attacks also shows great variation, but the vast majority are of less than 12 hours' duration (Table V.).

TABLE V.—*Showing the Longest Attacks to which Patient was subject.*

	Gallavardin and Froment.	Own cases.
Less than 12 hours ..	113	36
12–24 hours	27	8
24–48 hours	16	2
2–5 days	6	0
5–10 days	4	1
10 days–1 month	7	1
1 month–2 months ..	3	0
Up to one year	1	0
	177	48

Scattered through the literature attacks of exceptional length can be found—namely, 15 months (Ritchie).[69] Rarely do attacks last for more than ten days. In 160 cases quoted by Gallavardin, Veil, and Froment, 11 had attacks lasting more than ten days. Seven had attacks lasting from ten days to one month, and in four there were paroxysms lasting from 1 to 12 months. In some of the prolonged attacks it is difficult to be certain that there are not temporary cessations, and in a woman with organic heart disease whom I saw in her home the attack was said to have lasted eight months, but during my visit I detected three short pauses and it is probable that throughout the eight months temporary breaks occurred, without the patient's knowledge and unnoticed by her attendants. She died with congestive failure a month later without noticeable cessation of the paroxysm. (Not included in above Table.)

Sex.—The incidence in the sexes is almost equal—the proportion being given by Gallavardin and Froment[24] as 82 men to 95 women, and by Willius and Barnes[5] as 59 men to 51 women, which is probably the correct relationship, though my own figures show 34 males to 16 females.

Age.—The average age at which the attacks *started* was 36 years in 34 of my patients, in whom the date could be accurately determined, the youngest being six years and the oldest 73 years (nodal type). Table VI. sets out the ages at *onset* in decades.

TABLE VI.

10–20 years	8	60–70 years ..	5
20–30 „	7	70–80 „	1
30–40 „	4		
40–50 „	5		34
50–60 „	4		

Though the youngest patient in my series was 6 years old, attacks of paroxysmal tachycardia have been described from infancy onwards. The earliest record I can find was that described by Werley[82] in an infant 4 days old who developed a ventricular rate of 307. The attack passed off in a few hours. This was succeeded by another attack with a ventricular rate of 300 and respiration rate of 70, and the child was very cyanosed. The infant died on the sixth day and the only cardiac abnormality was a widely dilated foramen ovale (7 mm.). Attacks have been described at the age of 15 months (Russell and Ellison),[71] 27 months (Dressler and Levy),[16] and 32 months (Hutchison and Parkinson).[36] As I have already mentioned, it is extremely probable that unique attacks may occur in adults and isolated attacks may be completely overlooked in the young.

Ætiology.—It has been mentioned that the prime factors of causation of an attack of paroxysmal

tachycardia are still obscure, and the diversity of circumstances in which attacks appear makes this unsatisfactory admission quite comprehensible.

Heredity plays little part in most cases. Attacks have been described in four generations, and two of my patients are sisters—one with arterio-sclerosis and a blood pressure of 200 for ten years—and the other with a normal cardiovascular system. Infectious diseases, thyroid and ovarian derangements have been invoked but without any weight of evidence. Hypothetic nerve influences through the vagus and sympathetic nerves and actual involvement of these nerves by cervical and mediastinal tumours have been cited but do not convince. Morbid anatomy has failed to demonstrate any pathological lesion in the heart musculature, and none would be expected in a condition lasting so many years without any other evidence of cardiac involvement.

Diagnosis.

If an electrocardiogram is obtainable during a paroxysm, with some exceptions, a diagnosis of the exact type of tachycardia can be made. A *regular* tachycardia will conform to the electrical characteristics of a regular auricular flutter—e.g., 2 : 1—a supraventricular or a ventricular tachycardia. Secondly, the patient may be seen in an attack but there may be no opportunity of obtaining an electrical record. Without this assistance can a diagnosis be hazarded as to the particular type of tachycardia?

(*a*) If the ventricular rhythm is very *rapid and irregular* the probability lies between paroxysmal auricular fibrillation and auricular flutter. When the ventricles keep changing their response to the auricular stimulus in auricular flutter the irregularity determined by the stethoscope may be very complete and simulate fibrillation of the auricles. In auricular flutter, however, there are frequently periods when the ventricular rhythm is quite regular, as it is if the response is 1 : 1 or 2 : 1, so that long runs of regular ventricular contractions appearing from time to time interspersed amongst periods of irregularity would suggest auricular flutter. After all, the distinction is not so very important, as treatment by digitalis is indicated in both conditions. Vagal pressure in the neck will usually temporarily arrest or slow the ventricular rate in both paroxysmal fibrillation and flutter, but will not stop the attack.

(*b*) If the ventricular rhythm is very rapid and *regular* we have then to differentiate between a regular auricular flutter—e.g., 2 : 1 flutter, a supraventricular tachycardia, and a ventricular tachycardia. Again, vagal pressure may assist in the differentiation. If the attack is arrested then it is certain that the attack is supraventricular, vagal pressure having no influence on ventricular tachycardia and merely temporarily arrests or slows the ventricular speed in auricular flutter. If there is no response to vagal pressure—not even temporary arrest or slowing of the ventricles (auricular flutter)—the alternatives are supraventricular or ventricular tachycardia. If the patient is under 40 years of age, has been previously subject to attacks, and has no obvious cardiovascular disease, the enormous probability is that he is subject to attacks of supraventricular origin. If, on the other hand, he is over 40, and more probably between 50 and 60 years of age, if there is cardiovascular disease and the patient has only recently become subject to attacks, the paroxysm *may* be ventricular, though it is possible that the attack is supraventricular in origin. When only a history can be obtained and there is no opportunity of witnessing an attack the diagnosis of paroxysmal tachycardia may be obvious, but a surmise of its origin must be very speculative. The patient or an attendant may know whether the heart beats quite regularly in the attack and this fact, together with the other general considerations of age, the presence or absence of cardiovascular disease, and the length of time the attacks have lasted will all help to suggest the type.

Therapeutics.

The treatment may be considered from three points of view: (1) the arrest of the attack; (2) the prevention of attacks; (3) the treatment of any cardiovascular disease.

ARREST OF AN ATTACK.

If the patient has experienced many attacks he will have learnt to apply some simple "tricks" taught either by his medical attendant or discovered by himself. Such tricks comprise swallowing a long draught of water, a deep inspiration followed by a long forced expiration, bending forwards and pressing the thighs on the abdomen, and tickling the back of the throat to produce retching or vomiting. Some patients devise special methods of their own, and a boy with rheumatic heart disease confined to bed with heart failure would get out of bed after the onset of a paroxysm, would stand motionless with his back to the edge of the bed, hold his breath as long as he could, and when he could hold it no longer he violently threw himself backwards on to the bed. I saw him arrest many attacks in this way. The production of vomiting by emetics such as apomorphine has been advocated by some, but is not to be recommended if retching after tickling the throat does not arrest the attack. The vomiting produced by ipecacuanha and apomorphine may, in my own experience, cause great prostration and never brought an attack to an end.

The earlier in the attack that these various procedures are tried the more likely they are to be efficacious. If they have failed the next step is to compress the vagus in the neck. Theoretically, the right, supplying the sino-auricular nodal region, ought to be more effective than the left, but I usually employ the left and if left vagal pressure has failed I have never succeeded with the right. Some paroxysms of supraventricular tachycardia are immediately arrested, and though no statistics are available Gallavardin and Froment[24] claim that nearly one-half of supraventricular paroxysms may be arrested by vagal pressure. My own experience more nearly approaches success in one-sixth. Some paroxysms are arrested and the rhythm remains normal from 10 to 15 minutes, but the attack recommences and further vagal pressure is ineffective. Vagal pressure also is more effective early in the attack. I have two patients who have learnt to compress their own left vagus, and they always succeed in arresting a paroxysm by this means. Whether vagal compression succeeds by direct stimulation of the vagus nerve or by stimulation of the nerve of Hering, arising in the carotid sinus and reaching the medulla by the glossopharyngeal nerve, is an interesting physiological question. If vagal compression fails, ocular pressure with the thumb and index finger on the eyeballs may be essayed. This manœuvre succeeded in one case where vagal compression had failed. I have had no experience of the injection of ouabaine, physostigmine,[24] digitalis,[86] and choline, which have been recommended after apparent individual successes.

The above measures are applicable to paroxysms

with a supraventricular origin. In ventricular tachycardia quinidine sulphate has been advocated, and with some success. Levine and Fulton [47] recommend an initial dose of 0·3 g., raising the dose every four hours by 0·1 to 0·2 g. In one case they gave 1·5 g. five times in 24 hours, and in eight cases out of ten quinidine sulphate caused a return to a normal rhythm. Eight out of ten cases had coronary thrombosis and seven died, though the paroxysms were arrested. Ventricular tachycardia is a serious addition to the heart failure of coronary thrombosis but the ultimate prognosis depends on the degree of coronary blocking rather than on the added disability of ventricular tachycardia.

The lines of most effective treatment can be summarised. In supraventricular tachycardia after the various "tricks" have failed, vagal compression is successful in a definite proportion of cases, and no other remedies have been proved to be of general applicability. In ventricular tachycardia quinidine sulphate is immediately necessary, as the procedures effective in supraventricular tachycardia are quite ineffective.

PREVENTION OF ATTACKS.

Many patients know by experience that certain circumstances, such as peculiar movements, indigestion, and emotional causes, precipitate attacks and endeavour to avoid them. The frequency of attacks of paroxysmal tachycardia varies so much naturally that it is difficult to gauge the success of any line of treatment in the prevention of their recurrence. I have some evidence that quinidine sulphate in daily doses of grs. 6 diminishes the number when these have been excessive for a long period. For example, one man who had for three years experienced about a 100 annually had only about 30 each year after he took quinidine grs. 6 daily.

The treatment of any underlying cardiovascular disease is outside the scope of this inquiry and would necessarily embrace the whole range of cardiovascular disease.

CONCLUSION.

In conclusion, attacks of paroxysmal tachycardia are a common disability, occurring most frequently in those who are free from any suspicion of cardiovascular disease, but also in association with various forms of heart disease. In neither class have we any reasonable explanation of its appearance. The exciting focus is most commonly in the junctional tissues above the ventricles, and supraventricular tachycardia may harass an individual throughout a lifetime. Ventricular tachycardia is rare except as a terminal event in gross organic heart disease, which is usually fatal within a few months. Electrocardiographic and experimental research has given us a greater insight into the cardiac mechanism of paroxysmal tachycardia and the accumulated clinical experience allows us to speak with greater assurance as to prognosis and treatment.

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GLASGOW HOSPITALS.—The new radiological department of the Western Infirmary has now been formally opened by Mrs. R. S. MacGregor who, with her husband, was among the largest contributors to the cost. It was stated that ten years ago the number of X ray photographs taken was about 6000, but that this year the number has increased to over 19,000.—Mrs. McCredie, daughter of the Lord Provost (Mr. Thomas Kelly), has opened an extension of the country branch at Drumchapel of the Royal Hospital for Sick Children. The enlargement consists of three main wards, two isolation wards, and a nurses' home. The branch will now accommodate about 80 children.

FILTER-PASSING TRANSMISSIBLE BACTERIOLYTIC AGENTS (BACTERIOPHAGE).

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In my paper entitled An Investigation on the Nature of Ultramicroscopic Viruses, published in The Lancet of Dec. 4th, 1915, I gave a broad description of the essential characteristics of the filter-passing transmissible bacteriolytic agents, now frequently described under the name of "the bacteriophage."

I showed that they could be found associated with various micrococci and with members of the dysentery-typhoid-*coli* group of bacteria, and that they possessed different degrees of activity. Unfortunately, I had no opportunity for some years to continue the research, but I discussed the significance of the phenomenon, and the variations which had been observed, at the annual meeting of the British Medical Association at Glasgow in 1922, and in several papers published a little later.

A very large number of researches on the phenomenon have since been carried out by workers in almost all countries. D'Hérelle, in particular, has made an extended investigation into most aspects of the subject. It has been suggested that the active agent, described by d'Hérelle under the name of "the bacteriophage," differs from the agents I described in my original paper. Although nearly 15 years have elapsed since my first publication, this view is still sometimes put forward, and appears to be based, partly at least, on a very narrow and critical interpretation of a few words and sentences in my paper.

In view of the importance which some workers attach to the small differences in some of the results we have described, and to the fact that d'Hérelle himself has again invited me to reply, I propose, in this short paper, to relate the circumstances which determine those differences, and to explain a little more fully a few facts given in my first paper, which may have been either overlooked or not fully understood, in the hope that other workers will then be in a better position to appreciate their significance.

In the first place, it is well to remember that human knowledge has advanced in all countries much more rapidly than has our means of expressing that knowledge in words. When, then, a description has to be short, the writer can only select the best words available from a language that has lagged behind knowledge, to describe his thoughts or experiments. I therefore ask readers of my original paper to judge my meaning from the paper as a whole, and not to select individual words or short sentences, and place these under a too narrow or exacting scrutiny, particularly where small variations in experimental technique may give rise to quantitative variations in results, or where a description has had to be condensed into a few words.

Nature of the Active Agent.

The nature of the active agent has been the subject of considerable controversy, some workers agreeing with d'Hérelle that it is a living virus, and some maintaining that it is not. I have observed that certain workers appear to believe that I am definitely against the virus theory. I wish therefore to make it quite clear that none of my writings is intended to convey that meaning. My attitude is that the nature of these agents is *not settled*. There are arguments that can be brought forward both for and against the virus theory, and I suggest that it is not in keeping with scientific principles to make a dogmatic assertion one way or the other until definite proof is forthcoming. This was the attitude I took up in my original communication, where I considered the possibility that it might be a virus, as well as various other possibilities. Moreover, I have discussed this question in considerable detail in two more recent papers.[1] This aspect of the subject cannot here be discussed *briefly* with any certainty that I will be correctly understood, so I hope readers will refer to these previous papers if they desire to become acquainted with my views.

In the past I have frequently alluded to the active agent as the bacteriolysin, but in this paper and in future writings I propose to refer to it either as "the bacteriophage" or as "the filter-passing transmissible bacteriolytic agents." The name "bacteriolytic agents" is probably less confusing than that of "bacteriolysin." When speaking of them as a group I may use the word agent in place of agents; and I may also use agent when describing the results of d'Hérelle, as I believe d'Hérelle is still of the opinion that there is only one bacteriophage. It will not always be necessary to use the full title, and in such cases "the lytic agent" or "the active agent" will be sufficient.

It has been observed that the characteristics of the filter-passing transmissible bacteriolytic agents which I described show that, in some respects, my results indicate a more complete action than that obtained by d'Hérelle for such a bacterium as the dysentery bacillus. I, however, would point out that my main description was based, chiefly, on the maximum effect I could obtain with an active agent and a susceptible micro-organism; and my detailed description applies particularly to micrococci and lytic agents which I obtained from glycerinated calf vaccinia lymph. I agree that the action may be much less complete with some strains of the lytic agents and with certain varieties of bacteria. In my paper I drew attention to that fact, and pointed out that my vaccinia strain of the active agent had some action, but "very much less" on *Staphylococcus aureus* and *albus* isolated from boils of man. Also, that I obtained "similar, though not such definite results with a micrococcus and a member of the *coli*-typhoid group" obtained from the intestine of a dog. On the other hand, a very active lytic agent was obtained from a case of infantile diarrhœa and vomiting in a child. It will be seen therefore that I agree as to the existence of filter-passing transmissible bacteriolytic agents possessing various degrees of potency, and recognise that different micro-organisms may possess different degrees of susceptibility. D'Hérelle, in his writings, maintains that there is only one bacteriophage, and, in effect, wishes to limit the use of this name to a particular strain. If, however, the name "bacteriophage" is to be retained, it can scarcely be applied to the intestinal strain, or type, isolated by d'Hérelle without its being also applied to the three intestinal strains which I had previously isolated. I suggest also that no evidence has been

[1] A Theoretical Study of the Nature of Ultra-microscopic Viruses, Veterinary Journal, August and September, 1922; and the Ultra-microscopic Viruses, Jour. State Med., August, 1923, vol. xxxi., p. 351.

brought forward that would justify our placing the strains I isolated from vaccinia in a different category.

When describing one of my experiments, I observed that when a pure culture of "the white or the yellow micrococcus" isolated from vaccinia is touched with lytic material, it "starts to become transparent or glassy, and this gradually spreads over the whole growth, sometimes killing out all the micrococci." To some workers this description indicates that my active agents differ from that described by d'Hérelle, as with his the action will not spread over the "whole" growth. André Gratia has shown that it is really a case of quantitative effect, and with this view I agree. In the sentence given above the word "whole" was not intended to be interpreted in its narrow sense under all circumstances and conditions, as is clearly shown by the use of the word "sometimes" which immediately follows. This is emphasised by the next sentence, which reads: "Experiments showed that the action is more rapid and complete with vigorous-growing young cultures than with old ones."

Conditions Favourable to Bacteriolysis.

Under very favourable conditions, it is possible to get a white or yellow micrococcus growth (isolated from vaccinia) so completely lysed that to the naked eye it appears to be entirely replaced by, or transformed into, a glassy, transparent or translucent substance. To obtain this maximum effect, the following conditions should be observed:—

(1) The lytic agent should be active. (2) The coccus should be susceptible, and must be the correct variety for the active agent used. (3) The culture should be very young. (4) The culture should be limited in extent, preferably to the lower part of the tube. (5) The medium should be in every way suitable to the lytic agent, and, in some cases at least, should be slightly alkaline. (6) The temperature should be suitable for the particular lytic agent used. (7) Plenty of moisture is advisable. (8) Probably the supply of oxygen should be limited.

It may be noted that capping the culture tube with gutta-percha tissue will assist in obtaining the last two of the conditions given above.

With further reference to the question of anaerobia, I have in the past stated that this does not favour the action. I believe, however, that this is due chiefly, if not entirely, to the fact that, under strict anaerobic conditions, the growth of many micro-organisms is either stopped or so far hindered that it becomes unsuitable for the action of the lytic agent; because an actively growing culture (although in the first few hours growth may not be visible) is probably one of the most essential conditions. It appears probable, however, that the lytic agent does not require a free supply of oxygen, for, in the case of some vaccinia micrococci and various members of the dysentery-typhoid-*coli* group of bacteria, the maximum *visible effect* of the lytic agent, in some experiments, occurs when the cultures are capped and are growing well; and we know that under these conditions the medium may be deprived of a large part of its absorbed oxygen.

That the correct temperature and correct oxygen supply are two of the important factors which determine the degree and rapidity with which lysis may take place is indicated by another aspect of the subject on which there has been some controversy. In my first paper occurs the statement that "if in an infected tube small areas of micrococci are left, and this usually happens when the micrococcus has grown well before becoming infected, these areas will start to grow again and extend over the transparent portions." Some workers have failed to obtain this result with "bacteriophages," so I propose to give shortly the conditions which should be observed in order to obtain this result. I would point out at once that the extension of the remaining coccus growth over the lysed areas will not as a rule extend far, owing to the exhaustion of the medium; but under suitable conditions a considerable extension can be obtained. The chief conditions that favour this result are:—

(1) The reaction of the medium should be more suitable to the growth of the coccus than to the action of the lytic agent.

(2) The culture should at no stage have become so overgrown with the coccus or bacterium that it has become exhausted of nutriment.

(3) The temperature should be changed from that most suitable to the action of the lytic agent to that which is relatively more suitable to the growth of the micro-organism. Under the conditions of the experiment it is best, with many types, to lower the incubator temperature to about 20° C. to 30° C.

(4) With aerobic micro-organisms the tube should be uncapped, to allow of a free supply of oxygen, and possibly some evaporation of moisture.

One may conclude, then, that this character is most easily demonstrated with an aerobic micro-organism which will continue to grow at a temperature and under conditions that are relatively less suitable for the action of the lytic agent.

It has also been said that in my first description of the lytic agents I made no allusion to the so-called inhibitory action, which is claimed to be a characteristic of the bacteriophage. I would, however, draw attention to various descriptions in my original paper which show clearly that I obtained these so-called inhibitory results. For instance, I stated, "and in some cases it is so active that the growth is stopped and turns transparent almost directly it starts." Further on, when describing the isolation of a bacillus from a case of infantile diarrhœa and vomiting, I stated, "but this was only so when precautions were taken to eliminate the action of a dissolving substance which infected the colonies so rapidly that they were dissolved before attaining a size visible to the eye." It is true, I did not describe these as inhibitory actions. On the contrary, I deliberately refrained from doing so, and for this reason: I had already shown that the lytic agent had little or no effect on dead micro-organisms, and from that I concluded that life with some growth of the micro-organism (however small or microscopic it might be) was essential to the action of the agent. In fact, I believed that some microscopic degree of growth always took place, even when the experiment *appeared to show* a true inhibitory action. Gratia demonstrated this on *Bacillus coli* in 1920. If, then, there is any divergence in this class of experiment, it is not in the results obtained, but only in the conclusions which some workers and myself have drawn from those results. That the action described as inhibitory and the action of lysis of visible growth are in fact manifestations of one and the same phenomenon has been very completely demonstrated by Gratia. At the meeting of the British Medical Association at Glasgow in 1922, Gratia showed a beautiful series of experiments in which he used the *same* filter-passing agent under varying conditions of experiment, and obtained the one or the other manifestation of the phenomenon according as he varied those conditions.

Another point in my original paper that has occasionally been considered as not applying to the

bacteriophage is my observation that "on examination of these glassy areas nothing but minute granules, staining reddish with Giemsa, could be seen." It has been said that these granules do not occur with the true bacteriophage. I would, however, point out that to find many of these granules it is necessary to repeat my experiment and to examine the material in its most concentrated form, such as occurs when surface growth has been lysed. In my paper I made no suggestion that the granules could be easily found and distinguished in fluid cultures, or in cultures that showed no visible growth of the micro-organism. Moreover, it is probable that some, if not all, of these granules represent the remains of the broken-down micro-organism. In this case the number and the size of the granules must depend, to some extent at least, upon the number and upon the variety of the micro-organism that has been acted upon.

The Culture Media.

I wish now to give some consideration to the question of the different types of media that have been used. It has been assumed by some that my results were confined to agar cultures. If, however, reference is made to my original paper, it will be noted that, in the first part, I mention that in my investigation of the ultra-microscopic viruses "several hundred media were tested," and that it was "impossible to describe all these in detail, but generally agar, egg, or serum was used as a basis." Naturally, when testing so many types of media, a certain number of fluids, including broths, were used, and many experiments with the transmissible bacteriolytic agents were made on these media. If my description was based on agar cultures it was because on this medium the fundamental characters of the lytic agent appeared to be demonstrated better than on any other, and circumstances compelled me to be as short and concise as possible. In particular, the experiments on agar demonstrated one of the most important characters of the active agent. They showed that the action started from definite spots or areas, and that these varied in number according to the dilution of the active agent. On the other hand, fluid cultures do not show any fundamental characters that cannot be demonstrated on agar, although for certain experiments broth cultures may be more convenient to use. Here it may be noted that egg media are particularly suitable for use when making primary cultures to isolate some strains of the active agent.

When the action takes place on certain micro-organisms a halo may occur in the medium. This was first described by Gratia, since when there have been discussions as to its significance. I have also observed this character, and here I may say that I have found it to be associated with the production, or setting free, of some alkali or alkaline substance. This is particularly marked when certain micrococci, such as varieties which can be obtained from urine, are lysed by the active agent. From this it would appear that the reaction of the medium and its constitution will have some effect on the result.

Thermal Death-point of the Bacteriophage.

The temperature at which the active agent is destroyed has also been the subject of considerable discussion. In my first paper I gave the thermal death-point as 60° C., whereas d'Hérelle, in his papers, has given it as 70° C., or over, for the bacteriophage. André Gratia and others have pointed out that the critical temperature is relative, and varies with different bacteriophages, and with this view I agree. It must be remembered that my experiments on the thermal death-point were carried out on the lytic agent found in association with white and yellow micrococci isolated from glycerinated calf vaccinia lymph. I did not in that paper give any exact figure for the bacteriophages which I had found in the intestinal tract associated with other bacteria, such as those belonging to the dysentery-typhoid-*coli* group. It must also be noted that the results obtained in such experiments depend, to some extent, on the exact conditions of the experiment, and particularly on the exact constitution of the fluid containing the active agent and on the volume of fluid heated. In my experiments I used a small portion of the glassy lysed coccus, and made this into an emulsion with 0·85 per cent. sodium chloride in distilled water. The emulsion was drawn up into *small capillary tubes*, which were then sealed at both ends and completely immersed in the water bath. Full details of confirmatory experiments were given in my paper on the Transmissible Bacterial Lysin, published in THE LANCET of Sept. 26th, 1925. If these conditions of the experiment are altered in certain directions the thermal death-point may appear to be raised, but in my experiments I took care to avoid any circumstance or condition coming into play that might protect the lytic agent. I, however, agree with d'Hérelle and some other workers that the thermal death-point may be higher than that for the particular strain of the agent which may be found in association with micrococci in vaccinia; and even from vaccinia one can often get a strain that is not completely destroyed at 60° C. It would, indeed, be strange if such a variation did not exist.

Original Studies not Completed.

It is to be hoped that the details I have now given will be sufficient to enable other workers to obtain all the results I gave in my original paper. If the first description of those results was not quite complete in every detail, it must be remembered that it was published in 1915 when circumstances compelled me to be as brief as possible. In any case, it would have been impossible in a single paper to have submitted every aspect of a phenomenon which has since proved to offer such a wide scope for theoretical discussion and experimental investigation. Moreover, in view of certain criticisms that have been made, I feel bound to place on record the fact that my paper was submitted for publication when my financial grant from the Local Government Board ceased and I had been asked to undertake laboratory duties in the Army, and it was actually published only a few weeks before I was ordered to Salonika. From a study of the last three paragraphs of my original paper it will be clear how anxious I was to obtain the necessary filter-passing transmissible bacteriolytic agent for the Shiga and Flexner types of dysentery bacilli, and to test vaccines prepared from the active agent and the lysed bacteria. The matter was brought up for discussion in 1916, at a meeting in Salonika, which was attended also by officers of the French and Canadian medical staffs. Unfortunately, this and other attempts on my part to be allowed to continue the investigation were not approved partly, I think, on account of the amount of routine work which had to be carried out in connexion with the sickness that was prevalent. It was some time after the end of the war before I was really free again to continue the investigation, but by that time most of the additional details of the

phenomenon had been published by other workers under the title of "the bacteriophage." So I passed on to other work.

D'Hérelle, in a communication published in the *Bulletins et Mémoires de la Société Nationale de Chirurgie*, dated May 17th, 1930, complains that I have never answered any question put to me regarding the phenomenon I described. I admit that with one or two exceptions this is true, in that I have, as far as was possible in my writings, avoided entering into a discussion that I believed would serve no useful purpose. This applies to the claim made by d'Hérelle that there are certain differences which represent important points of distinction between his bacteriophage and the filter-passing transmissible agents which I previously described. I was convinced that sooner or later their identity would be recognised, and I felt content to leave this aspect of the subject to the judgment of independent workers.

In the paper to which I have referred d'Hérelle draws attention to the descriptions given by certain workers on *Bacillus pyocyaneus*. It is suggested that some of these results represent a phenomenon that has no connexion with the bacteriophage, but has a certain resemblance to the phenomenon I described. More direct suggestions have also been made in the past that, *unlike those obtained with the bacteriophage*, my results indicate a degenerative process. I must confess I am unable to appreciate arguments of this kind, and I prefer to reply by referring readers to my original paper. I would, however, point out that I have carried out no work on *B. pyocyaneus*.

Properties of the Bacteriophage.

In the same paper d'Hérelle submits that there are three properties, among others, by which the bacteriophage is distinguished. In order that there may be no further complaints regarding my silence I will now consider this claim. The points mentioned by d'Hérelle refer to a certain reaction demonstrated by a resistance of the bacterium to the action of the bacteriophage, and to the character of progressive adaptation to resistance against antiseptics and the production of a specific anti-bacteriophage principle in the blood of inoculated animals. I suggest that these are minor points of detail, where one would expect the results of experiments to vary according to the strain of active agent used. The exact meaning of the first point is not quite clear. If it refers to the production of a strain of a bacterium that is resistant to the action of the bacteriophage, then it will be sufficient to point out that adaptation is a character of bacteria, and it can be demonstrated when bacteria are placed under the influence of some substance which is harmful to them. In the case of immunity reactions in particular it is probable that some strains of the lytic agent would prove to be more toxic than others. It is also possible that the nature of the micro-organism, associated with the agent, will have some effect in determining results. I doubt if the active agent has ever been freed from the products of the broken-down micro-organism, and although these products may not produce their characteristic immunity reactions, they may still be toxic in another way, and so affect the results obtained with different strains of the active lytic agent. If, however, d'Hérelle should show that some strains of the active agent conform to his requirements while others do not, it will be interesting, and his experiments might confirm the generally accepted view that there are more strains or varieties than one. In any case, in my paper I did not describe any immunity reactions, nor did I go into the question of adaptation to resistance against antiseptics. My original strains of the lytic agent died out during the war, and obviously it can never be known with *absolute certainty* to what extent my particular strains would have conformed to such details; but this would appear to be equally true for many strains since described under the name of "the bacteriophage."

As regards my own strains, I would again remind readers that, in addition to those I obtained from vaccinia, I also isolated two from the intestinal tract of a dog and one from the intestinal tract of a child. All these strains showed the same fundamental characters, of which the most important are:—

(1) They passed a porcelain filter.

(2) They increased in quantity, or multiplied, when associated, under suitable conditions, with cultures of a micro-organism that was susceptible to the particular strain used.

(3) They grew, or lived, or existed with, and at the expense of, the micro-organism, and this fact could be demonstrated by the lysis of a culture. This lysis, in some cases, might be so rapid and complete that the culture never showed sufficient growth to be visible to the naked eye, and might therefore give the appearance of an inhibitory action.

(4) When the active agent was sufficiently diluted, and was acting on visible growth of a micro-organism on a solid medium, then the action started from definite points or spots. When, also, a series of experiments was made it was found that the number of these spots diminished as the agent was further diluted. Under suitable conditions the "glassy" or clear spots increased in size.

(5) The agent could be communicated from one culture of a susceptible micro-organism to another of the same strain, in series, for an indefinite number of generations. This was equally true if the active agent was each time diluted with fluid and passed through a porcelain filter before being used.

Now, the agent described by d'Hérelle, under the name of "the bacteriophage," conforms to all of these fundamental characters. It is, therefore, a filter-passing transmissible bacteriolytic agent, and it was these agents that I described in my original paper.

CONTACT GLASSES FOR AMETROPIA.

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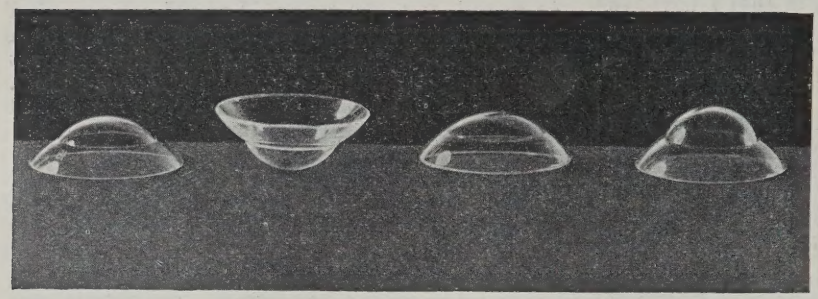
As the literature on this subject is still very scanty, the following notes are written to give a brief description of the glasses themselves, their uses, and the procedure adopted in prescribing them. Although the suggestion was not new even then, the Swiss ophthalmologist, Dr. A. E. Fick, in 1887 advocated contact glasses for the relief of keratoconus or conical cornea. At that time and for long afterwards the resources at the disposal of the optical manufacturer were unequal to the task of grinding glass to the necessary shape. The practical difficulties are obviously great. The shape of the glass is peculiar. It has an edge and one projecting rim which must be carefully rounded off and polished. Its curves must be optically exact. The glass is very thin and the difficulties in working the material are increased by its hardness. To produce a shell fulfilling these conditions out of a single piece of glass represents a triumph of optical achievement. In the earlier experiments of Fick and others, attention was drawn to the possibility of manufacturing glasses by blowing, and very successful results were sometimes obtained, especially by Müller of Wiesbaden. In blown-glass work, however, success in attaining the right form, even in

the hands of the most skilled craftsman, is largely in the nature of a happy accident. Occasional examples are perfect but cannot be uniformly repeated. Further, perfect optical efficiency of the outer surface is almost unattainable. Efforts were also made to mould glass into the necessary shape and materials other than glass were experimented with. It has all along been agreed that a ground glass, with surfaces based on accurate optical calculation, was the ideal, and within the past few years, largely as a result of the experiments and persistent advocacy of Geheimrat Prof. Heine of Kiel, this ideal has at last been realised by Messrs. Zeiss of Jena.

FIG. 1.



Description of the Glasses.

The modern ground glass (Fig. 1) is a thin, hollow glass bowl which fits on to the anterior part of the eyeball beneath the lids, in contact with the sclera but separated from the cornea by a fluid meniscus. It consists of a central, optically effective crown, which forms an arc of a sphere, surrounded by an optically ineffective peripheral brim, which also is spherical. The former may be called the corneal portion; the latter the sclerotic. The material is crown glass which has in sodium light a refractive index $\mu = 1{\cdot}516$, and is chemically highly resistant in order to withstand the corroding action of tears. It is well known that lacrymal secretion is destructive of glass. Artificial eyes soon become eroded.

The central or corneal part has a diameter of approximately 12 mm. and is about 0·5 mm. thick at the vertex. The diameter of the sclerotic zone (i.e., of the whole glass) is about 20 mm., and the total weight of the glass only 0·5 g. (grs. 7). It is thus easily carried by the eyeball in its movements around the centre of rotation.

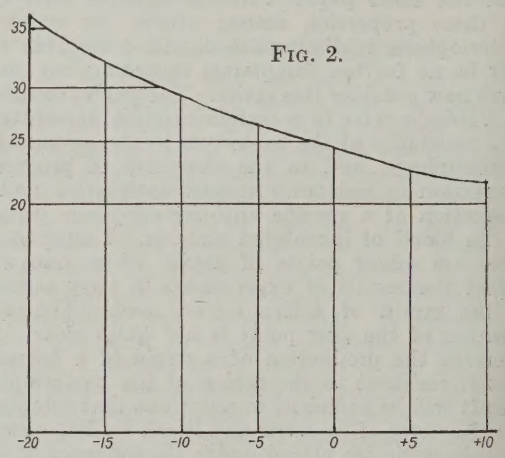
The function of the contact glass is to give a clear image of a distant object at the macula. For the correction of axial ametropia its corneal curvature, in combination with the fluid meniscus and the ocular lens system, must be designed to shift the posterior focus in eyes which vary in axial length from as low as 21 mm. to as high as 36 mm., representing all degrees of refractive error from about plus 10 D. to minus 20 D. (Fig. 2). Astigmatism need not be considered. The effect of the fluid meniscus between the cornea and the glass is that the cornea as an optical entity disappears. Except in later life, when senile changes occur in the lens, astigmatism is practically always corneal. With a contact glass, therefore, astigmatism is abolished. The problem is to select a glass by means of which the posterior focus of the combination (contact glass+fluid meniscus+ametropic ocular system) is at the fovea centralis retinæ; in other words, the posterior focus is shifted forwards for hypermetropic eyes and backwards for myopic ones.

The corneal crowns of contact test glasses have no optical power in air. The effect just described is entirely due to the fluid meniscus lying between the cornea and the inner surface of the glass. The refractive index of the cornea is approximately $\mu = 1{\cdot}376$ and that of tears approximately $\mu = 1{\cdot}336$. It follows that the fluid used should resemble tears. I have hitherto used normal saline solution (0·9 per cent.) which is almost isotonic with tears. Ridley, however, has recently drawn attention to the high protein content of tears, and I have lately experimented with other solutions which more nearly resemble his analyses. I may mention that in the earlier experiments a sugar solution was used.

Fitting and Prescribing Tests.

For the examination of the patient Messrs. Zeiss now supply a trial set of test contact glasses. The latter are arranged in series of three according to three standard scleral measurements. Each series has the same range of corneal radii—viz., from 5 to 11 mm.—representing the radius of curvature of the inner surface. The radii of the inner scleral curvatures measure 11, 12, 13 mm. respectively. These figures are etched on the rim of each glass in the trial case. Another figure which is also supplied denotes the vertex thickness of the test glass. It should be noted that the radius of the inner surface of the corneal portion is taken as the standard, as that of the outer surface varies according to the requirements of the patient. This point will be apparent later when the details of prescribing are considered.

FIG. 2.



Relation of axial length to axial ametropia.

The examination is apt to be tedious both to the patient and to the surgeon. After examining the eyes in the ordinary way, and determining the amount and character of the refraction, the process of selecting the best contact glass is begun. As several may have to be fitted and removed at each consultation, the conjunctiva must be anæsthetised. Holocaine drops (2 per cent.) are preferable to cocaine as it does not

dilate the pupil. I have, however, sometimes used 2 per cent. cocaine. A Petri dish filled with warm normal saline is convenient for handling the contact glasses. A small rubber sucker pressed on to the convex surface easily picks one up. The glass is held vertically by the attached bulb and filled with saline from a pipette. The patient leans forwards until his face is almost horizontal, and while he is in this posture the surgeon controls the eyelids with the fingers of his left hand and directs the patient to look at the glass. The contact glass containing saline must be kept level and gradually apposed to the cornea, the lids being at the same moment swept over it by the left hand and the suction bulb removed. It is not easy to control involuntary movements of the lids. When one occurs part of the fluid gets spilt and a bubble of air appears between the cornea and the glass. The bubble is a sore trial. It may recur again and again and there is nothing to be done but each time to take out the glass and start afresh. A small ivory spatula is provided for the removal of the glass. This is inserted under the rim so that the fluid drains away and the glass is allowed to drop on to a towel. During the examination, however, it is easy for an ophthalmic surgeon, who is accustomed to handling eyes, to dislocate it from its position by manœuvres of the lids.

Two separate and distinct determinations have to be made during the examination: (1) that of the most accurately fitting scleral brim; (2) that giving the necessary refractive power. To settle the first, the surgeon selects one of the three standard types of scleral measurements, and, having placed the glass in position, makes a careful examination by means of a good light and condensing lens. An accurate fit is indicated by a complete zone of adhesion near the limbus. If contact is greater at the periphery than at the limbus the rim will rub, irritate, and become intolerable. Such a glass must be rejected and one of the others tried. Good vision depends entirely on corneal curvature, but comfort depends on scleral curvature, and every effort must be made to get this right. It is even recommended that this should be done by examining the zone of contact with a slit-lamp and corneal microscope, but in my experience good focal illumination and a loupe give all the help that is required.

Having settled the matter of scleral fitting, the second problem, correction of the ametropia, remains to be considered. The particular glass to be tried first depends on the type of refractive error. For a patient with high hypermetropia, for example, one begins with a glass of small corneal curvature. Should the patient read 6/18 or better on the distant test-types, a trial frame is placed before the eyes and spheres (+ or −) added in order to decide whether vision can be still further improved. According to the result obtained other contact glasses, either with greater or less corneal curvature, are indicated, until the final result giving the best vision, with or without spherical additions, is arrived at. Where spherical additions are necessary it is important to ascertain another measurement, that between the vertex of the contact glass in situ and the back of the sphere in the trial frame. The best way to take this is with the Wessely keratometer, but there is no reason why a specially shaped millimetre scale should not be placed in actual contact with the vertex of the glass and the measurement read directly. The necessary data for writing a prescription are now available. These are: (1) the scleral radius; (2) the corneal radius; (3) the amount (in dioptres) and sign of any additional correction; and (4) the distance in mm. between the inner spherical vertex and the contact glass vertex. With regard to (3) it should be noted that the additional spheres ought not to be higher than about 4 D., otherwise the contact glass would become too heavy.

After the prescription has been dispensed the patient again attends in order to have his glass inserted by the surgeon. Most patients acquire tolerance surprisingly soon. At first he is advised to wear the glasses for a few hours only at a time, gradually lengthening the period until they can be worn all day without discomfort. They must always be removed at night.

Advantages.

This is not the place to discuss fully the advantages of contact glasses over spectacles, especially the optical considerations involved, but one or two points may be alluded to. Perhaps it may seem a disadvantage that for presbyopic patients a pair of reading spectacles is still necessary, but, as the strength of the reading correction need hardly ever be more than 2·5 D., a very light pair is all that is required. A consideration that is perhaps not so important now as formerly is that contact glasses are practically invisible. There are still circumstances, however, when this is desirable. The ametrope, especially the myope, has restored to him a full field of vision and full range of movement. The retinal image of the myope is magnified, up to 50 per cent. in some cases; that of the hypermetrope is much less influenced. This fact is susceptible of optical proof, but it is sufficient now to state that an enlarged image is a property of a long focus, such as the addition of a contact glass must of necessity confer. It assumes importance also in cases of anisometropia. It should be stated that contact glasses are not suitable for the treatment of squint. Perhaps their greatest value is in cases of corneal haze or irregular astigmatism, including conical cornea, which cannot be helped at all, or only to a slight extent, by ordinary glasses.

While the use of contact glasses and their possibilities cannot yet be said to have been fully explored, my brief experience has already convinced me that they have come to stay, and that in the future they will be found to constitute a very important addition to the methods now available for conserving and treating defects of vision.

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DONATIONS AND BEQUESTS.—Miss Alice Jane Davis, J.P., Belhaven-terrace, Kelvinside, Glasgow, left £2000 to the Western Infirmary, £1000 to the Royal Infirmary, and £500 to the Hazlewood House for Retired and Aged Nurses.—Alderman John William Turner, of Staincliffe, Batley, gave everything to his wife for life, and then £1000 to the Batley and District Hospital.—Over £20,000 will pass to charitable objects under the will of Miss Grace Lamb, of Bowdon, Cheshire, who left £48,570. Subject to various legacies she gave the residue of her property, about £20,000, between the Manchester Infirmary, the Altrincham Hospital, and the Prisoners' Aid Society, Manchester. She also appointed her one-tenth share of certain settlement funds to Ancoats Hospital, Manchester.—The Ingham Infirmary, South Shields, has received a cheque for £1000 from Mrs. C. W. Taylor, of Westoe Village, to endow a bed in memory of her son, Lieut.-Commander C. R. R. Taylor.

CLINICAL AND LABORATORY NOTES

CAUTERISATION OF ADHESIONS

IN TREATMENT OF BRONCHIECTASIS BY ARTIFICIAL PNEUMOTHORAX.

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AND

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PHYSICIAN TO OUT-PATIENTS AT THE HOSPITAL.

THE intrathoracic cauterisation of adhesions which are preventing the complete collapse of the lung is now a well-recognised procedure in the treatment of pulmonary tuberculosis by artificial pneumothorax.

Although artificial pneumothorax has been used as a therapeutic measure in some cases of bronchiectasis, we have been unable to find any records in the literature of the cauterisation of adhesions, which may be preventing complete collapse, in cases of bronchiectasis. We have had under our care two cases in which complete collapse was prevented by adhesions to the parietal pleura, and in which it seemed justifiable to attempt to obtain a complete collapse by division of the adhesions.

The procedure used in the cauterisation was that suggested by Maurer—i.e., enucleation of the adhesion at its parietal end; as the danger of infecting the pleura is more real in this disease than in tuberculosis, it is essential to use this method.

It is necessary to anæsthetise the pleura. For these two cases the Davidson one-way instrument was used. Although in the Chandler-Schranz instrument a special injectoscope has been devised, this necessitates another somewhat expensive appliance, and we have found our method quite satisfactory in practice when this instrument has not been available. Having localised the adhesion previously by X ray examination the instrument is introduced at right angles to the parietal end at what one judges to be 4 or 5 inches distant from it.

The probable site of the base of the adhesion under the external chest wall is judged by any one or a combination of three methods:—

(1) The instrument is advanced until it is as near to the base of the adhesion as possible, and from without the point of maximum light seen through the chest wall is marked on the skin overlying this area; as the light is diffused this method is not very accurate.

(2) The base of the adhesion is viewed through the instrument and, taking into consideration the angle of vision of the particular instrument, a finger is placed on the external wall of the chest at the judged insertion of the adhesion; this point is marked.

(3) The instrument is introduced until it touches the adhesion, and the straight line which it would make if continued through the chest wall is noted and marked.

The base of the adhesion having been thus localised on the external chest wall, a long stout hypodermic needle attached to a syringe containing 2 per cent. novocain is introduced through the nearest intercostal space and watched through the thoracoscope as it enters the pleura. With this method we have been successful in striking the base of adhesions only a few millimetres in diameter on the first trial; if, however, the point of the needle is a centimetre away it can usually be made to reach the base of the adhesion through the same skin opening. If the adhesion is not accessible directly, being under the scapula, a long needle such as may be used for splanchnic anæsthesia may be introduced from the side of the chest opposite to the adhesion and guided into the adhesion from the intrathoracic side. Successful collapse was obtained in both cases recorded.

CASE 1.—A female, aged 13, had had bronchiectasis of the left lower lobe since the age of 6, following a pneumonia. Artificial pneumothorax was induced on Oct. 4th, 1929. A skiagram on April 8th, 1930, showed the upper lobe completely collapsed and the lower lobe partly collapsed but held up by adhesion running from its upper part to the parietal pleura in the region of the fourth rib posteriorly. Cauterisation was performed on May 10th. A skiagram taken the next day showed division of the adhesion and further collapse of the lower lobe. The subsequent progress was satisfactory.

CASE 2.—A female, aged 11, had very extensive bronchiectasis on the left, diagnosed in 1925, when she was admitted to Victoria Park Hospital with a view to artificial pneumothorax. In consultation with our colleague, the late Dr. Clive Riviere, the idea was abandoned for fear of infection of the pleura; at that time artificial pneumothorax was not regarded favourably in bronchiectasis. In January, 1929, Mr. George Waugh (Hampstead General Hospital) performed a phrenic avulsion in an endeavour to ameliorate the condition. Some improvement followed. In December, 1929, the child started to have profuse hæmoptysis, and was admitted to Victoria Park Hospital with the idea of a thoracoplasty. Artificial pneumothorax was first attempted, and—very unexpectedly—was successful in producing a good collapse except for one wide adhesion. This adhesion was successfully divided, and a complete collapse was obtained. The hæmorrhage ceased and the child's general condition improved.

The cauterisation of adhesions in artificial pneumothorax induced for the treatment of bronchiectasis appears to be as successful in producing a collapse of the affected lung as it is in most cases of pulmonary tuberculosis.

PULMONARY EMBOLISM IN AN INFANT

FOLLOWING AURAL INFECTION.

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SURGEON, EAR, NOSE, AND THROAT DEPARTMENT, ROYAL MANCHESTER CHILDREN'S HOSPITAL.

THE extreme rarity of pulmonary embolism in childhood makes the following case worthy of record.

A female infant, 7 months old, was admitted under my care in hospital on April 30th, 1930. When 3 months old she had had pneumonia, after which both ears had started to run. On April 20th she seemed to have pain in the left ear and the discharge lessened. On April 27th a swelling appeared behind the left ear and gradually increased. On examination a typical acute mastoid abscess was observed on the left side. The right ear was also discharging. The heart and lungs were examined and no abnormality was found.

On May 1st a Schwartze operation was performed. The next eight days were uneventful, the infant apparently making excellent progress, while the local condition was entirely satisfactory. On May 9th at 2.30 A.M. the resident surgical officer was hurriedly summoned to see the infant, whom he found cyanosed and with very rapid respirations. The onset was quite sudden, the child having been apparently quite well a few minutes before. Oxygen was given through nasal catheters and camphor was injected. Death occurred at 6.30 A.M.

Permission was given for a modified post-mortem examination which did not allow the skull to be opened. This was performed by the resident surgical officer, Mr. Peake. Old clot, rounded, was found blocking the branches of

the pulmonary artery to both lower lobes and right middle lobe. There was no pneumonia, but these lobes were collapsed. Emphysema of the upper lobes was present. The heart was normal. Unfortunately the condition of the ears and lateral sinuses could not be discovered.

There are 11 recorded cases of pulmonary embolism in childhood, 8 of which were due to aural infection. In 1905 Pehu and Horand reported a case in a child of 6 years. A similar case was recorded by Guillemot in 1906, and in 1913 Lutz reported six cases. The remaining three were due to other causes.

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MEDICAL SOCIETIES

MEDICAL SOCIETY OF LONDON.

At a meeting of this Society on Nov. 10th, with Dr. R. A. YOUNG, the President, in the chair, Prof. CHEVALIER JACKSON (Philadelphia) opened a discussion on the diagnosis and treatment of

Malignant Disease of the Lung.

Many misgivings beset him, he said, when he contemplated taking part in this discussion. The bronchoscopist lacked the viewpoint of the internist and the surgeon, and this prevented him from having a comprehensive outlook on such a subject. However, clinical experience was clinical experience always, and facts were facts. Experience was that which was gained while looking for something else, and this was true for cancer of the lung.

Prof. Jackson's address consisted in the exhibition and explanation of photographs and radiograms of cases, with brief histories and results. Usually, he said, lymphoma was not regarded as malignant growth, and yet some of his cases of lymphoma presented many of the characteristics of malignant disease. He had had 14 or 15 cases of malignant disease associated with foreign body. A slide shown was that of a man who had cancer in the right lower lobe of the lung and also a tooth in the lung. A woman came to the radiologist with a pin in the lung and she died of hæmorrhage. The autopsy revealed a large cancer involving the right lower lobe in the same region as that in which the pin was found. That might not be more than a coincidence. Another patient came with advanced asthma; bronchoscopy was asked for, and a fungating granuloma was found which appeared to be in the trachea. It turned out to be epithelioma. Another was a man who had been spitting up pus for three years, and was having rises of temperature, but he was said never to have spat up blood. The radiologist suspected malignant disease in the left upper lobe. Bronchoscopy revealed a fungating, bleeding, oozing lesion, and histological examination showed it to be cancer. Another patient had been spitting up blood ten years, and he was thought to have a pulmonary abscess by the radiologist who saw him first. Later examination with X rays gave rise to the suspicion of malignant disease, for he was having fever of the intermittent septic type, and was spitting up quantities of foul pus. Bronchoscopy showed there was a cancer in the right main bronchus. Another man had had a cough 20 years, and a fungating lesion was found which had epithelialised; it was not bleeding, but was a nodule which could be nipped off. It proved to be carcinoma.

Prof. Jackson showed photographs of a case of atelectasis of the right lower lobe. Occasionally, he said, atelectasis would light up quickly. If atelectasis occurred slowly it might be due to absorption of air by the circulating blood, but when it was suddenly produced he believed it was due to a check-valve action pumping air out of the lung. In one such case he found a nodular fungating lesion, a floating tumour in the bronchus. He excised it, thinking it was a fibroma, 16 years ago. It was endothelioma, and it never recurred.

The treatment of cancer of the œsophagus by deep X ray therapy had been very disappointing in comparison with treatment of the lung. The mortality of cancer of the œsophagus still remained at 100 per cent. when treated with deep X ray therapy. The experience at his clinic had been that there were some malignant growths in the lung of a very low grade of malignancy, and which were quite sensitive to X rays and amenable to that treatment. Whatever might be said about lobectomy, it could be stated that it had never had a fair chance for a test, because cancer of the lung was almost never diagnosed early. It would always be recognised late until every patient suspected of pulmonary tuberculosis was examined with the bronchoscope. A very important sign in the diagnosis of malignant disease of the lung was a wheeze heard at the patient's open mouth; it was not heard at the chest wall. At his suggestion those at the clinic had adopted the maxim "all is not asthma that wheezes."

After showing a cinematograph film illustrating methods of examination and the appearances seen through the bronchoscope, Prof. Jackson said he was not an enthusiast about radium and radon seeds in cancer of the lung. Until more was known of ætiology of cancer and methods of treating it, lobectomy and radiology should receive special attention. It was a platitude in the profession that diagnosis of cancer should be made early, but it was not so well known that the bronchoscope should be used early; he did not know any other way of making an early diagnosis of cancer of the lung.

DISCUSSION.

Mr. V. E. NEGUS pointed out that in only a small percentage of cases of bronchoscopy was the reason the presence of a foreign body. Of 200 bronchoscopies he had performed, only five were for foreign body, the remainder being for other causes. To do this work with success a good deal of attention to small details was required, and that was one of the secrets of Prof. Jackson's great reputation, both as an operator and a teacher. It had been said that a drawback to a more general use of bronchoscopy was the difficulty of getting trained assistants, but this was only a partial difficulty if care was taken in the teaching; even at hospital, with a change of assistants and nurses every six months, it was possible to get success and he used local anæsthesia. Many thought bronchoscopy was unsuitable because a general anæsthetic was needed; not only was it unnecessary, but a patient with carcinoma of the lung was not a suitable

subject for a general anæsthetic. He used morphia and scopolamine. He exhibited a glass bronchoscopic shield which he had had made, in order to protect the face of the observer from the coughing up of discharges. When one part of the shield was befogged by the patient's expectoration a clear part could be turned and the observation continued.

Dr. J. F. BRAILSFORD showed pictures of a case in which bronchoscopy would not be of much use. There was a dense shadow, which very slowly increased in size, and no diagnosis could be arrived at. The patient had a temperature, and there was pain over the area; a needle inserted failed to withdraw anything. In the later stages growth was suspected, and eventually it was found to be sarcoma of the rib.

Mr. HERBERT TILLEY said that one of the main points in the opening address was that many lesions which clinically appeared to be of the ordinary type turned out to be malignant, and he showed slides of a case in which the symptoms suggested malignancy but it turned out to be benign. The man was gassed in March, 1918, and his symptoms dated from the gassing. In the October following he began to suffer from hæmoptysis, and later he had stridor and expectoration, with dyspnoea. The stridor was marked, and he had impaired respiration. X rays showed an infiltration round the right bronchus. In the consulting room the stridor and distress were very noticeable, and he was taken into a home and the tumour which was seen by radioscopy was removed. It was projecting into the trachea, and there was a complete check-valve action. It proved to be a papillary granuloma. Usually it was found that a supposedly benign growth turned out to be malignant, but in this instance it was the reverse.

Mr. H. P. NELSON pointed out the importance of irradiating the glands, and explained his investigations with this object. On the cadaver he was able to push radon seeds through the bronchial wall into the glands. Radon seeds could not be got into the hila, for that would mean too great a displacement of trachea and bronchi. He had succeeded in introducing radon seeds by means of a diathermy current of low amperage, and with very little bleeding.

Mr. J. E. H. ROBERTS said he felt that surgical removal was not, and never would be, of much use in the majority of cases of carcinoma of bronchus or lung. The future, in his opinion, lay in irradiation, by X rays, radium, and radon. He showed an apparatus by which a number of radon seeds could be propelled into a growth from the handle of the machine. The problem of inserting radon seeds into the lung through an open thoracotomy was not a simple one, for in a large number of cases infection was already present in the pulmonary airways; and if the lung was to be punctured through an open thoracotomy wound, there was grave danger of causing pyothorax, which in such a patient might rapidly cause death. He felt that the mode of use of radon seeds into malignant growths had long been haphazard; instead of the few seeds used as a rule, there should be a dozen, perhaps two dozen.

Mr. TUDOR EDWARDS said there appeared to be two types of growth which arose in the lung. A good deal had been heard about the primary bronchial growth, but there was another type, a rarer one, arising in the periphery of the lung. Two months ago, in a paper he read at Winnipeg, he recorded 116 cases of growths of the lung itself which he had seen, and only eight of them arose in the peripheral parts of the lung. In three he attempted removal of the growth. One was an epithelioma, and it recurred in three months; he did a partial lobectomy of the lower lobe. Both the others were endotheliomata. One died owing to a technical operation error, and the other was operated upon two years ago, having the lower lobe removed, and he was alive and well to-day. Now and again one encountered a secondary growth which justified removal, but usually secondary deposits were multiple. There was a smaller probability of being able to successfully remove bronchial new growths; they arose from near the main bronchi, and that meant requiring a complete pneumectomy, which was impossible. Still, he removed in January last a growth which seemed central to the bronchus, a columnar-celled carcinoma the size of a walnut, and the patient survived and was, he believed, alive to-day. He had been disappointed with the results of X ray treatment of pulmonary growths, for they did not seem to react well to the rays. He showed an instrument, consisting of a double tube, for the introduction of radon seeds, capable of holding two dozen seeds, and the seeds could be introduced through the bronchoscope. Its object was to keep the lumen open and prevent the stagnation which was a factor in keeping the patient somewhat ill. He had kept such a tube in situ for six and a half days, and he thought this time could be extended.

Dr. G. VILVANDRÉ thought that some 90 per cent. of the growths in the lung visible by X rays were carcinomatous, and obviously were such as were difficult of removal. He described a case in which he was able to prove that each radon seed had a marked influence on the surrounding tissue only to the extent of 1 cm., thus supporting the contention of those who advocated many seeds, so as to ensure every part of the growth being irradiated. He did not think carcinoma of the lung would be diagnosed in the X ray room, nor did he think the bronchoscopist could diagnose many of the early cases; these must be recognised by the general practitioner, who should be taught the early signs.

The PRESIDENT felt that this type of case was met with nowadays more frequently than could be accounted for by more precise methods of diagnosis. He did not think enough use was yet made of radiography, lipiodol, and bronchoscopy. He agreed that lobectomy was the method of choice for some of the small localised growths away from the hila, but unfortunately these growths were not recognised until secondary growths had occurred in the neighbourhood of the hila.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY.

AT the opening meeting of this Section on Nov. 5th the new President, Mr. CHARLES H. FAGGE, took the the chair and delivered an address on the

Aims and Limitations of Modern Surgery.

No one, he said, could have had charge of patients for 30 years, as he had, without occasionally asking himself whether his ideals had been achieved. Happy was the surgeon who could claim, as many no doubt could, that his aim was still to the infinities of the heavens. The philosophic surgeon, however, would confess that his ideal was still unaccomplished, for his aim was restoration to the normal, both as to organism and tissue. It seemed a pity that so much time and energy were taken up in attempting to prolong the life of patients suffering from terminal states, for whom the surgeon's efforts can do no more than leave them in a condition far from normal. Far too much

of modern surgery was mutilation. Excluding correction of injuries, such as fractures, and cosmetic operations, such as those for cleft palate and hare-lip, there was little in surgical technique which did not replace one evil by another. That fascinating field which sought to combat the ravages of age by transplanting an organ, or part of an organ, from an ape closely allied to man, or to replace a damaged or diseased organ by a similar organ taken from another human being, or to graft a finger where one had been missing, was still in its infancy. Much in this domain could not bear the test of results. Such transplantations could only succeed when the technique of connecting the blood-vessels and lymphatics of the transplated viscus to those of the host had been improved so far that the nutritive fluids could immediately be set going.

What, said Mr. Fagge, were the physical limitations placed in the surgeon's way? Apart from those engendered by the morbid state of the patient, there were the limitations resulting from the nature of bodily tissues and from the healing of every operation wound. There was, no doubt, truth in Lord Moynihan's remark that surgery as a craft had now reached finality, but it was not new; Erichsen had made it when Listerism first became firmly established. Even with the best technique and most accurate primary union a scar resulted. The width of a scar, though of no importance in coarser tissues, was an absolute bar to function in highly specialised glands, and blocked the transmission of impulses in any part of the nervous system. Modern aseptic technique had modified the amount of scar tissue formed by limiting the leucocytic infiltration, but if he was right in believing that proliferation of fixed connective tissue cells was the ultimate factor in causing fibrous tissue to form he could see no means of controlling it.

What happened, he asked, to any one of the higher connective tissues when it was subjected to an abnormal strain? In a patient who had undergone a radical cure by Bassini's method for inguinal hernia the appearance of the conjoined tendon was familiar. Normally, this formed a robust muscular upper border to the inguinal canal, which by its contraction was closed at the upper end, so forming a sphincter to the internal abdominal ring when the abdominal wall muscles were put into action. But when sutured down to the inguinal ligament one of two results ensued: either the stitches cut out or the mass of muscles degenerated to form a thin fibrous barrier. This might be a sufficient protection against recurrence, but its function was now no more than mechanical and its structure was greatly changed. Human tissues were intolerant of abnormal tension. A strain applied to soft parts usually resulted in suture material, whatever its nature or strength, cutting through; there was a giving way of the structure which it was intended to hold down, or a scar was formed by degeneration of the tissues held down. This limitation applied to many so-called pexies. In operations for incisional or ventral hernia where a scar area had been produced by infection, and the fibrous tissue over it offered but feeble resistance to normal abdominal tension, the surgeon's object was to replace the scar by normal resilient muscular layers. Much ingenuity had been expended in attempting to close this defect, yet most devices did no more than replace a thin weak scar by a thicker and more resistant one; such was the result of introducing metal filligrees or living suture material like fascia lata. Attention should be paid, Mr. Fagge suggested, not to the gap, but rather to the tissue which filled it, and to the free excision of all abnormal fibrous tissue in the scar. When this had been done, normal aponeurosis and normal muscle could be approximated, each to each, and the layers of the abdominal wall sutured one by one. He had not met with a case of incisional or ventral hernia which he could not close in this way with ordinary catgut sutures; they were all now following their ordinary occupations. An eccentricity of scar formation was traumatic keloid, but probably if this was freely excised it would not re-form.

DISCUSSION.

Mr. MAX PAGE thought the President was a little unjust to his department when he suggested that, with the exception of face-lifting and so forth, surgery was a mutilating procedure. In treating ventral hernia when a large gap was left his habit was to carry out a plastic operation, generally without the employment of any foreign material. He had attempted to get apposition of the main bulk of the abdominal wall by an overlap, such as was practised in the Mayo operation for umbilical hernia. Many cases during the war in which there was gross loss of tissue had been treated on these lines with good results. He was interested to hear that keloids could be excised and a good scar result; his own view had been that if a keloid was excised another appeared in its place. He would have liked to hear a reference to the treatment of infective processes; the older the surgeon the more he was inclined to leave infection alone and simply to avoid tension.

Mr. ZACHARY COPE suggested that the surgeon limited himself by the multiplication of specialties. But there could be no limit to surgery; if it was to live it must advance, and first of all in the direction of intelligent coöperation between surgeon and physician. Such advance might result in the avoidance of operation; in the next ten years, for instance, a medical cure might be found for exophthalmic goitre, which was a toxic process. Gastric ulcer also should be curable without operation. In some parts of the body the eradication of disease by radium left no scar which could be seen. Many keloids vanished under the influence of X rays; certainly they became softer.

Mr. A. J. WALTON agreed that the chief aim and object of the surgeon of the future would be the abolition of surgery. Practically all surgical operations were mutilating; he had always laid down a rule that as little normal tissue should be removed as possible. Mr. Cope was right in his reference to exophthalmic goitre; at present surgery was the only certain method of cure, but he could not envisage the surgeon being associated for long with such a mutilating operation. The continental method of removing half a stomach for a small ulcer was wrong in theory. In his own practice he found himself doing more medicine and less surgery. The surgery which approached nearest to the ideal, in restoring normal function, was the removal of benign tumours. Other instances were fractures and wounds of normal tissue, in which structure and function could be restored with the minimum of scar tissue. There was, he thought, no condition in which the surgeon felt so helpless as in infective processes. For himself he was coming to the view that extensive surgical procedures for the treatment of sepsis were wrong; it was now his custom to wait until the sepsis became localised and then to deal with the focus. He had seen in recent times far fewer instances of widespread operation for cellulitis.

Dr. N. L. LLOYD spoke of the variations sometimes seen in patients suffering from congenital abnormalities, such as children who had just escaped hare-lip.

All surgeons had seen cases of the kind in which nature had produced scars such as the surgeon strove in vain to emulate; why, he asked, was this so? Every face was, in fact, made up of a series of marvellously sutured seams. He had been struck by the occasional occurrence of keloid in an inguinal incision; his impression was that it occurred more frequently at the lower end of the hernial scar than at the upper, but it was a matter of conjecture whether that was due to encroaching on the area of the pubic hair, especially as in the case of children the growth of hair in that region was a matter for the future. He had excised keloids and seen them recur. The proper treatment of keloid was, he thought, to excise it and then apply radium. Some children seemed specially prone to keloid formation.

Mr. JULIAN TAYLOR said that any surgeon who had attempted to operate on a case of strangulated hernia between a filigree would hesitate to use this method. It was, he thought, very rare for a hernia of the abdomen to be due to a nerve injury; most abdominal injuries were within the linea semilunaris and the only muscle which could be paralysed was the rectus. It was a different matter in old war injuries, in which all the nerves in the area might have been destroyed, almost on their emergence from the lumbar spine.

Mr. HUGH LETT did not think that surgery was in such a bad way as had been inferred. In speaking of mutilating operations one had to consider on what kind of patients they were performed. A gall-bladder might be so hopelessly diseased as to result in a general poisoning of the patient; and if the surgeon could remove it and restore that patient to perfect health the "mutilation" was surely justified. Plastic surgery had brought about extraordinary improvements. Resection of parts of the bladder, and perhaps of the ureter, for deadly disease rendered patients practically as well as they were before. Had the title of the address been extended to include the aims and limitations of surgeons, as well as of surgery, an amusing as well as an interesting discussion might have ensued. He related the case of a man of 62 whose penis he had removed for carcinoma 14 years ago, and who was told to return in about three months to have the glands removed. He failed to do so, but returned recently because he had hydrocele. Limitations were sometimes imposed on the surgeon by the patient, who might, as in this instance, score heavily.

REPLY.

The PRESIDENT remarked that each surgeon must find out his own limitations; he should learn what he could and what he could not do. It was surely better to do an operation he knew he could accomplish than another which someone else had advised. Acute infections he did not regard as part of his text. He had never had to deal with a hernia due to paralysis of muscle. In cases of abdominal hernia he relied on spinal anæsthesia.

UNITED SERVICES SECTION.

AT a meeting of this Section, held on Nov. 10th, Surgeon Captain S. F. DUDLEY, the President, took the chair, and Group Captain MARTIN FLACK read a paper on

Air-sickness and Sea-sickness.

He said that air-sickness and sea-sickness had certain factors in common, and differed in the relative importance of these factors. The data concerning air-sickness were based largely on opinion, and statistics were still badly needed. Nevertheless, he had come to the conclusion that the great cause of air-sickness—apart from anticipatory anxiety, which was difficult to estimate—was defective ventilation. Pilots who had never been sick in open machines suffered as soon as they flew in cabin machines. The problem of ventilation was very troublesome. An aeroplane ventilated from back to front, and the cabin tended to be stuffy in some parts and cold in others. An open window did not cool the person who opened it, but made a draught on the back of the neck of the person sitting immediately in front. If a passenger vomited in front, those behind all saw his sufferings; if he vomited at the back the smell was conveyed all through the cabin. It was important that the foot level be warmer than the head level, or the passengers would feel stuffiness. Research was being undertaken with the katathermometer, and it was hoped that this work would soon bear fruit.

The factor of undue stimulation or supersensitiveness of the vestibular apparatus weighed less in the air than at sea, for the air was smoother and the amount of disturbance to the semicircular canal smaller. Persons who were sea-sick were not necessarily air-sick; if this fact could be brought to the public notice it would lessen the importance of anticipatory anxiety, and popularise flying. The lack of agreement between visual, labyrinthine, and deep muscle sensations was important in the air, and to reduce it passengers must have a wide view of the horizon through good windows. This was one of the chief reasons why the high-wing monoplane was one of the most comfortable machines in which to travel; the passenger's view was not intermittently interrupted by moving struts and wires. It was also necessary to increase the amenities within the cabin. Vomit receptacles must be hidden from the public eye, and the passenger's interest directed to booklets or maps rather than to ominous paper bags or the agonies of their fellows. Persons handicapped by supersensitiveness of the semicircular canals were eliminated from among would-be pilots by their reaction to rotation in a chair. Those liable to become dizzy in the air had a marked rise of blood pressure and disturbance of ocular muscle balance, although their nystagmus time might be normal. Another group who complained of giddiness actually tended to faint; they manifested a fall in diastolic pressure. Candidates who suffered from anticipatory anxiety showed a rise in blood pressure when placed in the chair, even before it began to rotate.

SEA-SICKNESS.

Group Captain Flack described the results of tests which he had carried out in liners. There was a small group of passengers who had a supersensitive labyrinth and who would be sea-sick at any uneven movement. The mechanism seemed to be merely a stimulation of the vagus, which caused contraction of the stomach and vomiting. In most sufferers some additional factor was necessary. The sensory dilemma played an important part: people did not like their eyes to tell them that the ship was coming down while their labyrinth told them that it was going up and the deep muscles gave them some other information. Persons who had acquired their "sea-legs" tended to correct the dilemma by movement of the head. This factor was probably aggravated by the induction or increase of ocular muscle imbalance. Members of a crew who had never been sick for 20 years or more had all been found to possess good ocular muscle balance

Imbalance was measured by the Bishop Harman diaphragm, and tests had shown that it was increased during the period of nausea, whether the eyes were open or shut. It might be an effect of the uneven movement and not a cause; it was brought about by reflex action from the semicircular canals and the eye or neck muscles. One of the symptoms was disinclination to continue reading.

Physical factors, such as stuffiness and smells, were undoubtedly important to a number of people, especially when combined with anticipatory nervous anxiety. The general health and time of exposure also played their part. The phenomena of acidosis and acetonuria required investigation, and it was necessary to differentiate between the afferent stimuli and the resulting impulses. These changes in the blood chemistry were an effect and not a cause. Some persons who suffered from severe sea-sickness were really in a state of semi-starvation. Many persons, even if they had no tendency to dyspepsia, were not in a fit state to withstand uneven movement, especially those who had drunk too much alcohol the night before. The effects of sea-sickness might be confused with those of alcohol. Poverty of abdominal tone might predispose, and some patients—especially those with slack abdominal walls—staved off sickness by wearing abdominal belts.

In conclusion, Group Captain Flack said that each case needed close examination before the right treatment could be prescribed. A "blunderbuss" must contain a drug which would prevent the afferent impulses from reaching the centres; a large dose of alkali might be useful, and the mixture might be made palatable with sugar.

The PRESIDENT suggested that the ventilation problem in aeroplanes might be solved by mechanical ventilation. In his experience, a fit and athletic man with plenty of tone was less likely to be sea-sick than a person of inferior physique. Alcoholic excess was not important; alcohol actually relieved the condition, either by inhibiting stimuli or by destroying the sense of position in space and of movement of the ship.

Surgeon Vice-Admiral ARTHUR GASKELL remarked that some persons obtained protection from sea-sickness by tying a horse's girth tightly round the waist. He asked whether ocular muscle imbalance was not purely a concomitant of vomiting.

AN ŒSOPHAGEAL FACTOR.

Dr. E. P. POULTON doubted whether the labyrinth was as important as Group Captain Flack suggested. Stimulation of the labyrinth ought to cause nystagmus, but this had never been observed by G. H. Oriel. The connexion of the labyrinth with sea-sickness had been supposed from the phenomenon of Ménière's disease, but the most striking symptom of this was vertigo, of which few sea-sick persons complained. From observations he had made on a student he had discovered that nausea was associated with an extreme relaxation of the œsophagus; he suggested that it was identical with, or preliminary to, œsophageal pain. In ordinary contraction of the muscle the one took pressure off the end-organs, but when tone was relaxed the pressure reached them. Swing tests had shown that nausea was felt either just before or just after the dead centre on each side—i.e., on a movement tending to elongate the œsophagus. It was considerably less severe after dinner. This theory explained the relief the patient felt when he lay down, and the greater severity of a pitch than a roll. Nausea was not the only effect; he had himself felt a tightness in the head, and suggested that congestion of cerebro-spinal fluid upwards might be considered in this connexion. He agreed that the chemical changes were secondary.

Wing Commander F. N. SMARTT complained that Group Captain Flack had dealt chiefly with secondary causes. He did not agree that stuffiness was a basic cause of air-sickness; bumping would cause sickness whatever the conditions of ventilation. Sickness in the air or at sea was due to a splanchnic defect, which caused a definite sensation of loss of equilibrium. This might possibly be felt through the eyes, semicircular canals, or splanchnic area. An air pilot was only made sick by severe bumping, this being the one sensation which he could not anticipate. The spinning test was imperfect, for it involved no disturbance of equilibrium. Movements which induced nystagmus would hardly ever induce sickness in persons who had no splanchnic defect. Vibrational noise was an important contributory cause in the air.

Dr. HUGH STANNUS suggested that the sickness of sea and air was identical with that of a stuffy room, and that the effect on the semicircular canals was not necessarily a primary factor. He asked whether Group Captain Flack had noticed any signs of a diathesis in the histories of his subjects, and whether, acetonuria might not be the result of anticipation. Sea-sickness was often associated with diarrhœa.

Surgeon Commander G. H. HAYES differentiated between patients who recovered immediately and those who were prostrated; he asked the reason for the difference between these types.

Fleet Surgeon W. E. HOME did not regard ocular muscle imbalance as very important; he himself possessed only monocular vision, but was often sick. If sea-sickness were due to splanchnic imbalance patients would not become immune so quickly.

Group Captain FLACK briefly replied.

SECTION OF PSYCHIATRY.

AT a meeting of this Section, held on Nov. 11th Dr. S. A. KINNIER WILSON delivered his presidential address on the

Approach to the Study of Hysteria.

Hysteria, he said, had not yet yielded its secret. The period of psychological study had been marked by a lack of objective and empirical research. The outstanding feature of hysteria was, perhaps, the changes which its clinical syndromes had undergone. Religious stigmata and impersonations of great actresses were out of date; as was the simulated spinal disease which had been outstanding in the early part of the eighteenth century. The phases had corresponded with contemporary medical predilections; the hysteric had done her best to adapt to the calls made on her. To-day we sought the clue in the psyche, and the hysteric found her somatic manifestations at a discount. Nevertheless, the kaleidoscopic patterns of hysteria were composed of unaltering instinctive and impulsive reactions, and an earthquake or a world war would lay bare manifestations resembling the classical ones. Hysteria might be but a name for a reaction, capable of being expressed in dynamic neurophysiological terms. How were the disturbances of function actually brought into being? Could anything be learnt of the seat of the functional defect? Organic disease would teach more about hysteria than vice versa. Physiological investigation needed no apology, but few psychologists had pursued it.

CLINICAL FEATURES OF HYSTERIA.

Defective inhibition of the antagonists was a pathognomonic sign of the utmost value. A paraplegic asked to extend the legs would first show contraction of the hamstrings. This was a disorder of the Sherringtonian law of reciprocal innervation. In the "organic" condition of athetosis and in some frontal lobe conditions a similar derangement of this law might be seen, and the conclusion was, therefore, that hysterical palsies bore the physiological imprint of cortical defect of function. Another valuable sign was the "shunting sign," in which the innervation was shunted to another group. If the patient was asked to grip a finger the grip was absurdly weak, but the biceps or deltoid might be in powerful contraction. This also might be found in some organic conditions. Both could be imitated voluntarily, but this did not therefore indicate simulation. "Voluntary" detonisation might proceed so far as to cause loss of knee-jerks, and a fair reproduction of Jacksonian epilepsy could also be given "voluntarily." The criterion of imitational capability was worth nothing. The point was that imitability characterised motor phenomena, of which the seat was cortical. Both "shunting" and "antagonist contraction" signs indicated impairment of cortical function coupled with defective inhibition.

Hysterical tremor presented no distinctive features from those of "organic" tremors; typical "intention tremor" was seen in hysterical cases, and "organic" tremors were affected by numerous psychic factors sometimes supposed to affect hysterical tremors only. Fluidity of organic tremors was so pronounced as to render any such distinction valueless. Patients with hysterical tremors were supposed to suffer less from fatigue than normal persons imitating tremors, but as long as the tremor was kept up, it might be indistinguishable from an "organic" one. In hysteria, as in organic states, tremor was an escape phenomenon of an infracortical level.

Hysterical fits, ranging from fugues to immobility, were hard to synthesise, but were one and all escapes from conscious control. Clinical differences between hysterical and other convulsions stood for modifications in site and extent, but not for intrinsically different processes. The hysteric might simulate decerebrate rigidity. If the hysterical process removed the action of the cortex it was hard to see how the patient could adopt any other attitude. The anæsthesias of hysteria were supposed to correspond with psychological and not with physiological disposition, but in syringomyelia there might be glove and stocking anæsthesia; in parietal lobe lesions there might be sensory changes in hand and leg, and "organic" disease might involve loss of sensibility over the front of the body and not over the back. These types, therefore, were not specific for hysteria. Absence of bleeding on pin-prick had been seen in thrombosis of the cerebellar vessels. Bulbar centres and mechanisms might thus be involved in hysteria.

Reflectivity was often abnormal in hysteria; the plantar response might be lost, the abdominal reflex weakened or lost, and ankle-clonus or sphincteric trouble might be found. These phenomena must bear the same interpretation as in "organic" lesions.

CONCLUSION.

Cortical, infracortical, mesencephalic bulbar, spinal, and neurosympathetic mechanisms might be disordered in function as a result of processes called hysterical. Differentiating criteria between "organic" and "hysterial" conditions had lost much of their specificity. In one of its respects, at least, the condition became less mysterious when its processes could be traced through various physiological levels. The terms of opposites "organic" and "functional," "structural" and "nutritional," should be abandoned, but "dynamic" and "static" could be used. Hysteria showed a prominence of dynamic and a comparative absence of static elements. Rapid cure was to be explained on the hypothesis that function was abrogated dynamically and not statically. A strictly sexual ætiology was not universally applicable. On the view that hysterical manifestations were simply reactions to stimuli it was still hard to understand why these restricted stimuli should be capable of causing responses varying from fugue to retention of urine. There was a glaring hiatus. Emotional states could be taken as exciting if not predisposing causes, but individual hysterical reactions were not easily correlated with such a general excitant as emotion. In many cases it seemed impossible to associate the part of the body affected with some emotional incident. The hysteric was born and not made. The determinant might be really physiological and not psychological; an inherent liability of reaction, a lack of neuronic cohesion, an abnormal facility of dissociation of neural systems. The physiological basis of the will might be inhibition—a "letting go," rather than a "doing"—the essence of the voluntary act. Failure of transcortical control would then explain the phenomena of hysteria. The present trend was to reduce the number of functions once ascribed to volition, and much cortical activity was now regarded as reflex in nature. The cortex could only differ from the other ganglia in its complexity. An approach from below upwards had much to commend it; the gap between physiological and psychological was not likely to be bridged from the psychical side.

AN AMERICAN "PENNY-IN-THE-POUND" SCHEME.—The town of Bedford, Massachusetts, has adopted a contributory scheme on the model of that at Sheffield.

POSITION OF KING'S COLLEGE HOSPITAL.—Dr. Claud P. Serocold, the treasurer, states that "King's College Hospital is in dire straits and can no longer struggle to maintain its precarious foothold against financial difficulties," and that in default of adequate support many wards must be closed. The cost of maintenance exceeds £100,000, and the ordinary income fails to meet it by £18,000. This year securities to the value of £14,500 have been sold, and those that remain are insufficient to meet outstanding accounts amounting to £15,000. An increased income of not less than £20,000 is needed to maintain the work unimpaired. Ten years ago seven wards had to be closed, but "by extraordinary efforts" they were eventually reopened.

JOHANNESBURG HOSPITAL: MAINTENANCE APPEAL.—An appeal is about to be made to South Africans in London on behalf of the Johannesburg Hospital, which claims to be the largest institution for the care of the sick in the British Empire, with 1141 beds distributed among the General Hospital (530 beds), the Non-European Hospital (203), the Transvaal Hospital for Children (133), the City Fever Hospital (90), the Otto Beit Convalescent Home (52), and the Queen Victoria Hospital (43). To the institution is attached the medical school of the Witwatersrand University and a training school for nurses. Last year there were 18,400 in-patients, and 157,000 attendances at the casualty and out-patient departments. The cost of maintenance is £236,500. The Government gives a subsidy of 72 per cent. of expenditure; 24 per cent. comes from patients' fees and other revenue; the public contribute the remaining 4 per cent. Costs have, however, mounted so rapidly that the Government has been compelled to call a halt, and an appeal for more money has therefore become necessary.

THE VISIT OF PROF. CHEVALIER JACKSON.

THE medical profession has had the pleasure of welcoming in London during the past week Prof. Chevalier Jackson, of Philadelphia, whose developments of tracheal and bronchial surgery have for a long time made his name familiar to all our readers.

A Welcome from the Section of Laryngology, R.S.M.

The Section of Laryngology of the Royal Society of Medicine made out an inclusive programme to mark the event.

On Thursday, Nov. 6th, the Section met for a demonstration in colours of plastic operations by Prof. J. Eastman Sheehan, of New York, when Sir Harold Gillies and Mr. Lionel Colledge showed cases illustrating the end-result of such surgical procedures as the excision of costal cartilage for use in facial repairs, the utilisation of skin grafts of full thickness in lupus, and of epidermic grafts in cicatricial contracture of the hand. In the evening an At Home was given by Sir StClair Thomson to meet Prof. Chevalier Jackson and Mr. V. E. Negus, who had delivered the Semon lecture that afternoon (see p. 1086). There was a very large attendance.

On Friday, the 7th, the subject of precancerous conditions in general was reviewed by Prof. Chevalier Jackson in a debate before the Section. He submitted that a knowledge of precancerous conditions would solve many problems of ætiology, and a debate ensued on the general question whether the existence of a precancerous condition had as yet been proved. To that debate Sir StClair Thomson, Mr. Lionel Colledge, Dr. E. D. Davis, Mr. Herbert Tilley, Dr. J. A. Gibb, and Mr. E. Musgrave Woodman contributed, while interesting cases were shown by Mr. W. Stewart, Mr. L. Graham Brown, and others.

A Complimentary Dinner.

A dinner was given on Friday evening, at the Langham Hotel, by the Section of Laryngology in honour of Prof. Chevalier Jackson, when Mr. F. A. Rose, President of the Section, presided over a large company of well-known specialists and representative guests. Mr. Rose proposed the health of Prof. Chevalier Jackson in happy terms. Reminding the audience that Dr. Johnson had said that to praise a man in front of himself was always indelicate and often offensive, he refused to enlarge upon their guest's well-known work, either upon his surgical achievements in carcinoma of the larynx or his famous exploits with the bronchoscope. He aptly compared Prof. Chevalier Jackson with Elias Howe, who invented the sewing-machine—"Howe showed the world that the eye of a needle should be at its point, and Jackson taught the medical world that the light of the bronchoscope should be placed at its tip." It was not for the surgical work and certainly not for the modest manner in which he suppressed his personality, but for his marvellous dexterity with the instrument which he had invented that their guest would be remembered. The toast was supported by Mr. Herbert Tilley, who told Prof. Jackson that, whether the statement was indelicate or offensive, he, as their guest, was surrounded by hero-worshippers.

Prof. Chevalier Jackson, in reply, said that the overwhelming reception which he had received had surprised him. He had been asked what qualities went to the making of a successful bronchoscopist, and he concluded that a man to reach the position must pass endless time in making experiments, many of which led nowhere, and in writing much that no one would read; the successful bronchoscopist was, in fact, a natural born fool. He gave an amusing illustration of his methods, when he described a fishing holiday on which he went, with two doctors who could not fish, to a river where there were no fish. He, for his part, took a small working outfit with him, and spent his time extracting fishhooks embedded in various ways in rubber tubes. He was considered by the mill-keeper, in whose mill the party had lodgings, to be mad, a view which was afterwards reversed, Prof. Jackson being found by the mill-keeper to be, "like myself, a man of high intelligence." The change of opinion was due to the fact that a large foreign body having fallen into the machinery of the mill, the mill-keeper commenced taking down the whole building. Whereupon Prof. Jackson rigged up, on bronchoscopy lines, some appropriate tackle, and extracted the foreign body as though the shaft of the mill were a larynx. Prof. Jackson said that the pleasure of the occasion was for him tinged with sadness for one reason—his father, born in Hull a century ago, could never know the events of the week.

The toast of the guests, other than the guest of the evening, was proposed by Dr. Dan McKenzie, who compared one kind of eloquence to sunshine that illumines the landscape and yet draws no attention to itself, and another kind of eloquence to moonshine that fills us with the sense of its own loveliness, but leaves the landscape hazy. A third kind, he suggested, was represented by the action of Swiss hotel-keepers who insult the majesty of the snowy peaks of the Bernese Oberland by throwing nightly searchlights upon them. As these men are unworthy of the beauty they live in so was he, he feared, unworthy of the task confided to him. He coupled the toast with the names of Sir Humphry Rolleston and Dr. Watts Eden. Mr. Alex. R. Tweedie briefly supported the toast, to which both distinguished guests responded.

Sir StClair Thomson proposed the health of the chairman, with whom he had had the pleasure of travelling on several occasions. He took the opportunity of insisting, for the benefit especially of the younger members of the company, on the enormous value of travel on the Continent and in the great transatlantic countries, while he congratulated Mr. Rose upon the successful commencement of his year of office.

On Monday evening Prof. Chevalier Jackson introduced a discussion on the Diagnosis and Treatment of Malignant Disease of the Chest, at the Medical Society of London; this is reported in another column.

DISTRICT BEDS FOR HOSPITALS.—In the summer of last year Dr. W. Lee suggested that the two Cheshire villages of Bredbury and Romiley should make a concerted effort to endow a bed at Stockport Infirmary and another at St. Mary's Hospital for Women and Children at Manchester, the total sum required being £2000. The population of the two villages is 10,000. The money was raised so easily that it was decided to increase the effort and to add a bed at the Manchester Royal Infirmary, and a cot at the Children's Hospital, Pendlebury, at a cost of £1500 for the two. The "campaign" has just ended with a bazaar which has brought up the total amount raised to £6500. The unexpended balance is to be used for further extensions of the scheme.

REVIEWS AND NOTICES OF BOOKS

Cancer of the Lung
and Other Intrathoracic Tumours.

By MAURICE DAVIDSON, M.A., M.D., Physician to the Brompton Hospital for Consumption and Diseases of the Chest, and Dean of the Brompton Hospital Medical School. Bristol: John Wright and Sons, Ltd.; London: Simpkin, Marshall, Ltd. 1930. Pp. 173. 17*s.* 6*d.*

THE literature of intrathoracic tumours has increased rapidly during the last decade. Dr. Davidson's book is based on the findings in a number of cases which have been treated in the Brompton Hospital. Short clinical notes and histories of 22 cases of intrathoracic tumour are given. Unfortunately, in three of the cases recorded, no post-mortem examination was made, and in about half of them no histological data are furnished, so that the exact nature of the tumours in these cases is uncertain. The clinical part of the work should be of much value. It is brief, concise, and very readable. Apart from the implication made that intrathoracic tumours are not especially characterised by pain, the author's findings are generally in accordance with those of other writers. Valuable information is given on diagnostic methods, such as lipiodol injections and bronchoscopy, and a helpful note on radiological technique is supplied by Dr. Stanley Melville. The section on pathology is somewhat sketchy. The discussion is confined practically entirely to problems of bronchial carcinoma; lymphosarcoma of the mediastinal glands is mentioned only to be dismissed as a condition for which bronchial carcinoma used, in the past, to be mistaken. The cases described, however, have not been limited to those of carcinoma of the bronchus; in Case 4 and Case 22 there appears to have been no bronchial or lung involvement; one of these was cited as a thymoma. In a separate section of the book certain non-malignant tumours, including dermoids and hydatid cysts of the mediastinum, are considered.

The Child's Conception of Causality.

By J. PIAGET, Professor at the University of Geneva. Pp. 309. 12*s.* 6*d.*

The Laws of Feeling.

By F. PAULHAN, Academie des Sciences Morales. Translated by C. K. OGDEN, M.A. Pp. 208. 10*s.* 6*d.* Both volumes published by Kegan Paul, Trench, Trübner and Co., Ltd., London. International Library of Psychology and Scientific Method. 1930.

THE first of these two books takes a stage further Prof. Jean Piaget's investigation of the child's world. The research is conducted in the familiar questionaire form made known to all readers of the author's early volume. The child, according to the author, starts with a view of the world which is essentially animistic. At first the lack of distinction between an inner and outer makes the world participate in the child's mental activities, and for some time the world interlocks organically with the processes of mind. During the period of severance, however, the mind still clings to this outer order, giving it consciousness, and causing it to retain some of the human attributes. According to the author's researches, this animism is reluctantly given up, and gives to subsequent ideas of causal relationship an "agency" which, even in philosophic thought, is not entirely relinquished. Five varieties of such "adherences" of subjective factors to the view of the external world have been described by Prof. Piaget—ranging from the early magical belief, through artificialism and thence to the idea of force—i.e., that things make efforts—analogous to muscular force. The transition to simple realism is achieved when the child appreciates its own subjectivity. But even then there is an absoluteness in its idea of substance in the passage to relativity and reciprocity. The development of causality in the child takes place along the same lines as does the construction of an external world of related parts, each and all related to the observant mind.

Prof. Piaget's conclusions from his interrogatories may not satisfy certain critics as to the animism of the child. It savours of the French anthropologists who separate categorically a primitive prelogical from a developed logical form of thought. However this may be, his studies are stimulating to thought, and, above all, to further researches in the same field.

Students of instinct and emotion, particularly in England, have been captivated by the exposition of Prof. McDougall in his Social Psychology. Some have eventually grown restless over his catalogue of instincts and their accompanying emotions, yet have felt unable to formulate trenchantly a counter theory which would be as comprehensive, as easy to handle, and yet conform as well and even better with the facts of psychology. Paulhan's essay on the Laws of Feeling, now accessible in English, brings forward a powerful thesis which not only allays much of the dissatisfaction felt over McDougall's standpoint but compensates for many of the shortcomings in psychology that created a hiatus between it and neurobiology. His thesis—that feeling and emotion are the result of arrested tendencies—will find many adherents in the apparently separated realms of biology and psychopathology. Such a theory is much more dynamic than any theories that have gone before, and fits the moving facts of life better than does an academically static catalogue. The author argues his thesis with abundant examples, acute insight, and the usual Gallic clarity and devotion to logic. The addition of a later essay on Feeling, Will and Intelligence concludes an important volume which should not be missed by students of psychopathology.

Röntgenuntersuchungen am Innenrelief des Verdauungskanals.

By Dr. HANS HEINRICH BERG, Professor at the University of Berlin; Senior Physician at the Charité University Clinic. Leipzig: Georg Thieme. 1930. Pp. 198. M.29.

THE X ray study of mucous membranes originated with Forssell of Stockholm, who, in a number of papers, drew attention to the fact that the radiologist may obtain much information about the lining membranes of the alimentary tract if suitable methods are employed. Prof. Berg has already made several important contributions to the subject, and this book is an expansion of his previous work. A few minor modifications of the ordinary opaque meal technique bring to the service of the radiologist the means of studying the living mucous membrane. Many of the

workers who employ the combined screening and palpation method for opaque meal investigations have for years past used the manipulation of the first mouthful as it reached the stomach for the demonstration of the folds of the mucous membrane. Berg has elaborated this technique in various ways, and extended it to the intestinal mucosa with most telling results, and it is not easy to over-estimate the diagnostic possibilities that are thus foreshadowed.

An extraordinary wealth of detail is revealed by the arduous technique. So trying is it, that seemingly no observer can undertake more than six cases in a day, the intensive palpation and manipulation being so exhausting. In the present state of our knowledge, detail obtained by these advanced methods is perhaps an embarrassment, for it complicates the problems of the diagnostician. The nearer we approach to the borderland where pathology and normality meet, the larger the number of borderland cases and the more difficult it is to differentiate. A thorough understanding of the possible variations of the normal becomes more and more essential for accurate diagnosis. These painstaking studies will be the basis on which Dr. Berg and other investigators will assuredly build up an entirely new conception of the normal and abnormal mucous membrane.

The book is illustrated by numerous radiograms and photographs of pathological specimens. All the illustrations are of a very high order of technical excellence.

An Hour on Health.

By MORRIS FISHBEIN, M.D., Editor of the *Journal of the American Medical Association*. London: J. B. Lippincott Company. Pp. 158. 4*s*. 6*d*.

THIS is a very readable little manual on healthy living, written obviously for the American business man, and the advice which is given him about his diet, rest, golf, and other recreations is both sound common sense and good physiology. The style is crisply American, and there are some amusing passages, more especially in the chapter on food fads and fallacies. The author has little patience with vegetarians, white bread fanatics, and cold bath enthusiasts. The Americans, he tells us, are a constipated people, but because of, or in spite of, this, "five generations of them, fed on meat and potatoes, develop sufficient stamina to contribute largely towards winning the World War." The prevention of heart disease is dealt with vaguely, and contains no reference to the method of direct attack on the incipient disease which has given such encouraging results in this country where, incidentally, the view accepted by the author that chronic tonsillar sepsis is a prime factor in the ætiology of juvenile rheumatism has not been substantiated. The last chapter, entitled Medicine in our Changing World, sets out the author's own views on various medico-political questions of the day. From many of these the English reader will dissent. With the truism that "the sick human being demands individualisation" the counter-advantages of team-work in the alleviation of human ills are rather lightly dismissed. In this chapter Dr. Fishbein lets his fancy have free play, and if his approach is not strictly scientific it is always interesting.

Journal of Pathology and Bacteriology.[1]

THE importance of venous invasion in the development of metastatic tumours in the liver, by R. A. Willis (Melbourne). The primary metastases invade the portal veins and so produce secondary crops.—*Spirillum minus* derived from a spontaneous infection in the mouse, by J. A. W. McCluskie (Glasgow). The strain was not pathogenic for guinea-pigs or man and may not be identical with the similar organism in rats which causes rat-bite fever.—Bacteriæmia following operations on the urethra, by F. J. F. Barrington and H. D. Wright (London). After the passage of bougies in an infected urinary tract, bacteria often invade the blood stream at once and soon disappear; malaise and rigors appear when the blood is sterile (see p. 1087).—The pharmacological action of the exotoxin of *Staphylococcus aureus*, by C. H. Kellaway, F. M. Burnet, and F. E. Williams (Melbourne). The main effect is a large fall of blood pressure, due partly to obstruction of the circulation through the lungs, and partly to a direct action on the myocardium.—The reactions of the cells in pleural effusions to supravital neutral red, by R. A. Hickling (London). Endothelial cells are by this method clearly distinguished from monocytes.—Reactions of the human skin to horse serum, by C. E. Kellett and H. D. Wright (London). The intracutaneous injection of horse serum in normal persons may be followed a few days later by a series of urticarial whealings which are presumably analogous to serum sickness.—The effect of immunisation upon temperature response in rabbits, by H. D. Wright (London). Vaccination reduces but does not abolish the fever which follows the inoculation of the dead homologous organism.—The staining of calcium, by G. R. Cameron (London). Neither hæmatoxylin nor silver nitrate is a reliable reagent for the microscopic detection of calcium salts; alizarin is nearly specific but not altogether easy to apply in practice. It stains recent deposits much better than old ones.—The pathological changes found in a fatal case of psittacosis, by G. H. Wilson (Birmingham). The consolidation of the lung is lobar with abundant fibrin formation, but there is no reaction by the polynuclear leucocytes and the bronchioles are not specially involved.—Isohæmagglutinins: the influence of the fœtus upon the titre of the mother's blood during pregnancy, by Kathleen Edgecombe (Liverpool). If the fœtus is of a different blood group from the mother, there is a considerable rise in the effective agglutinins in the mother's blood during pregnancy which disappears after childbirth. With a fœtus of the same or no group, little or no change occurs.—Anaphylactic responses of the guinea-pig's skin, by C. E. Kellett (London). Contrary to the usual experience, it is possible to produce serum sickness in a guinea-pig.—Schilder's encephalitis periaxialis diffusa in a rhesus monkey, by J. R. Perdrau (London).—Persistent eosinophilia, by A. M. Drennan and J. H. Biggart (Belfast). A case of leukæmia with considerable nodular deposits in which the neoplastic cells were sufficiently differentiated to appear as normal eosinophil leucocytes.—The pathological action of light: the repair of necrosed tissue, by A. G. Levy (London). A smaller dose of destructive stimuli causes considerable epithelial proliferation.—A case of tuberculosis of the stomach, by E. R. Cullinan (London). A boggy lesion at the cardiac end full of acid-fast bacilli; the lungs showed general miliary tuberculosis.—The influence of liver extract effective in pernicious anæmia upon the diameter of erythrocytes in experimental anæmias, by G. P. Wright and B. Arthur (Boston). Liver extract has no effect on the blood of normal rabbits, nor does it assist the cure of experimental anæmias caused by bleeding or phenylhydrazine. It, however, reduces the severity of phenylhydrazine anæmia. It is suggested that liver extract cures pernicious anæmia by promoting the orderly degeneration of the megaloblastic phase of the erythropoietic cycle.—Sacral chordoma with widespread metastases, by R. A. Willis (Melbourne). Secondary growths were found in lungs, heart, liver, spleen, kidneys, thyroid, and skin, and a number of bony exostoses were also present.—The influence

[1] Vol. xxxiii., No. 4, pp. 849–1174, October, 1930.

of testicular extract on dermal permeability and virus response, by D. McClean (London). Testicular extract improves the taking capacity of some strains of vaccine virus; it enables the inoculum to spread out among the cells more quickly after insertion.—Necrotic sequestration of the kidneys in pregnancy (symmetrical cortical necrosis), by W. de M. Scriver and H. Oertel (Montreal). Two cases confirmed post mortem and one which recovered.—Coal-miners' lung, by S. L. Cummins and A. F. Sladden (Cardiff and Swansea). A full account with many chemical analyses of lungs. Coal dust becomes important if it has been preceded or is accompanied by silica dust, which blocks the lymphatics and allows the coal dust to accumulate. Serious anthracosis always shows an abnormal amount of silica in the lung.—A further contribution to the pathogenesis is experimental poliomyelitis: inoculation into the sciatic nerve, by E. W. Hurst (London). The virus spreads along the axons; the cerebro-spinal fluid is relatively unimportant. After sciatic inoculation the virus can be found in the corresponding motor cortex before it can be detected in the cervical cord.—The types of tubercle bacilli occurring in the sputum of phthisical persons, by A. S. Griffith (Cambridge). Fully tested and verified bovine bacilli have been found in the sputum of cases of phthisis in England in 3 cases out of 327 examined, in Scotland in 18 out of 468. In two bovine bacilli were also obtained from the lungs at autopsy.—Direct platelet counting, by H. K. Goadby (London). He uses paraffin-lined pipettes.—Individuality in the size of red cells, by C. Price-Jones (London). Each person has a characteristic mean diameter of red cell which is maintained over long periods.

PANEL AND CONTRACT PRACTICE

London Public Medical Service.

The Public Medical Service for London came into being in the spring of 1926, when rules were framed by the members of the London Panel Committee, the British Medical Association, and the Medical Practitioners' Union, who were instrumental in its inception. Its main ideal was to provide medical attendance and medicine by a contributory scheme for persons unable to pay the usual medical charges in the ordinary way, the income limit being fixed at the same figure as that under the National Health Insurance Acts—namely, £250 per annum. At the same time it was agreed that the practitioners who implemented the service should receive adequate remuneration. With these points in mind the weekly payment of a subscriber was fixed at 3*d.*, an entrance fee of 1*s.* and a quarterly levy of 9*d.* being charged to cover the cost of administration. In this way a practitioner was to receive 13*s.* per annum for each subscriber, out of which medicine had to be provided. The average cost of medicine per subscriber per annum is computed at 2*s.* Recently a flat rate of payment has been introduced in the Kensington and Paddington areas, where the local committees found that the separate payment of a quarterly levy was irksome. In these areas the rate for a single subscriber is 4*d.* (the doctor reserving the right to charge 6*d.* a week if the risk of sickness seems likely to be above the average), for two in family 8*d.*, for three 11*d.*, for four or more 1*s.* 1*d.*, the entrance fee being 1*s.* for one subscriber and 2*s.* for two or more. A percentage deduction is made for administration in the areas where the flat rate operates.

The service was inaugurated at a series of local meetings in the various London boroughs, and by the end of 1926 the subscribers numbered a little over 5000. Since then progress, though not realising the expectations of the management committee, has been steady. The latest figures are as follows:—

Number of practitioners working the Service	402
Number of honorary members (i.e., practitioners not working the Service but who are in agreement with its principles and wish to be associated with it) ..	110
Number of subscribers	11,461

Although 11,461 subscribers may not seem a large number for an area like London, it should be remembered that the service was inaugurated just when the disastrous strike of 1926 occurred. Another source of loss has been the removal of working-class population from the Metropolis to London County Council estates which are outside the area of the service. Deaths, removals, discontinuance of subscriptions owing to unemployment, subscribers becoming eligible for treatment under the National Health Insurance Acts, all contribute to limit the total number of subscribers. The main difficulty has been in making the public aware of the existence of the service. The restriction on public announcement is felt to be somewhat hard on a movement which is endeavouring to do its share in assisting the community towards the goal of better health. Signs are not lacking, however, that the public is beginning to realise the existence of the service; subscribers are now coming in at the rate of 100 a month, and an increasing number of inquiries are being received at the head office, 17, Russell-square, W.C. 1.

The Patient who goes to a Bonesetter.

"If an insured person," we have been asked, "with an injury to the shoulder, fails to keep an appointment made by her panel doctor to see a surgeon in a neighbouring town, but goes instead to an unqualified bonesetter and continues to go to him for treatment is the panel doctor justified (1) ethically, (2) under his terms of service, in refusing (*a*) to treat her, should she subsequently apply to him for treatment, (*b*) to give weekly certificates of incapacity for work, should she apply for them?"

Answer.—1. Ethically the panel doctor is quite justified in refusing both treatment and service.

2. (*a*) Under his terms of service it is open to argument that the refusal might constitute a breach of contract with the insurance committee. The insured person has been guaranteed medical benefit and if she applies for treatment it is difficult for the practitioner to refuse. She has, however, made it difficult, if not impossible, for him to render the proper treatment if she puts herself into the hands of an unqualified person. The proper course would be to report the facts to the insurance committee, in order to protect himself from their criticism and subsequent action.

2. (*b*) With regard to sickness benefit the panel doctor has to deal with the approved society of which his patient is a member. Supposing that the action of the insured person is not conducive to speedy recovery, he should withhold certificates and report the matter to the society, which may refuse benefit to a member found guilty of infringing the benefit rules. Moreover, as a general rule, the practitioner should not give certificates where he is not rendering the treatment himself. Before being in a position to certify, he has to make a complete examination, and difficulties will arise unless he is making this examination as a preliminary to advice and treatment.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 15, 1930.

INTERNATIONAL MEDICINE.

THE League of Nations has now reported upon its work during the first ten years of its existence,[1] and the record sets forth briefly and impartially both the progress which has been accomplished and the methods which have been devised for dealing with international problems as they arose. The League represents aspirations that have been set before the world for some 200 years, but in its practical form it was born of the Great War with the purpose to abolish war. It came into being in 1919, when the political, financial, and economic crises, whose settlement was urgent, while they may have revealed to the observant the gigantic tasks that would lie before the new institution, deflected from it public attention. The statesmen of the world were absorbed in dealing with these crises, whose effects fastened the thoughts of each nation on its own affairs. Thus the early proceedings of the League were little noticed and the excellent account, now given, of what has been done and why certain activities were undertaken, and how, in consequence, other activities followed, will have for many the force of novelty. Further, the tale of performance must convince all who read it carefully that the League is a necessity—that it is an organisation which has already achieved great things, and one which must be in the future of incalculable benefit to the world.

It is a commonplace that in medicine we have a department of knowledge which is truly international; the practice of medicine itself forms an international league as different nations enter into scientific relations with each other. In the efforts made to settle frontiers, to codify international law, to bring about coöperation along financial and economic lines, to organise disarmament, and to settle disputes by arbitration, there must always be room for qualifying discussions; but there can be no two opinions as to the benefit to the world of international schemes for the promotion of health. A nation must consider itself outraged if an historic province be taken from it to be added to the possessions of a neighbour, but no nation will have any objection to being robbed of its burden of sickness; and while commercial tariffs cannot be altered for the benefit of one people or industry without the risk of inflicting corresponding damage elsewhere, the improvement of health in any place on the globe tends to improve the health of the world at large. This was recognised by the delegates composing the earliest assembly of the League, and in the second meeting of the Council, held in February, 1920, only a few weeks after the settlement of the constitution, it was decided to summon an international meeting of health experts to draw up a scheme of organisation. And none too soon. For in April of that year epidemics of typhus, relapsing fever, and cholera, spreading from Russia towards the west, called for urgent measures, and the first duty of the international conference was the erection of a temporary Epidemics Commission. The strenuous work of this Commission was chronicled from time to time in our columns, and there is no doubt that, by the strength and authority which it gave to Poland and other countries in the institution of a sanitary cordon on the frontiers of Russia, it saved mid-Europe from devastating disease. While the Epidemics Commission was thus employed, a provisional health committee, which had been set up at Geneva, worked out the scheme for the Health Organisation of the League, which was adopted in September, 1923, when the relations of the League with the previously existing international official health authority, the Office International d'Hygiène Publique, were settled. The settlement was effected partly on the basis of official liaison, partly by the delimitation of function under which the older body has since continued and developed as its own the task of preparing and supervising formal agreements between Governments, on quarantine, and other medical administrative subjects. The proceedings at this Assembly of the League, as far as they related to medicine, were of extreme interest, and indeed made it quite evident that the League did not require to establish any monopoly in order to break the new and fruitful ground which was ready. The basis of permanent organisation, the international differences in mortality from diseases like cancer and the comparative figures in other diseases, the incidence of malaria and sleeping sickness, and the international standardisation of serums were among the subjects discussed, and the verbal views were immediately reflected in practical work which is now proceeding; this those specially interested have been able to appreciate in official publications, many of which have been noticed in THE LANCET.

Among the earliest activities of the Health Organisation was the collection and distribution of medical news. An epidemiological intelligence service was set up at Geneva and a bureau of information upon tropical maladies was instituted at Singapore. A dissemination of morbidity and mortality statistics followed, utilising and popularising that provided by the international agreements. This has been especially valuable in epidemiology, since here, before useful work can be done, the relative importance of the diseases must be ascertained. The first practical workers for the League knew this from experience, for the efficacy of the prophylactic measures taken along the Russo-Polish borders depended upon the interchange of

[1] League of Nations: Ten Years of World Coöperation. Foreword by Sir Eric Drummond, Secretary-General of the League. London: George Allen and Unwin, Ltd. 1930. Pp. 467. 10*s*.

prompt and full information across the frontier. All these matters are clearly set out in the new publication of the League Secretariat, which gives a clear story of the development of the League, and of international medicine under its auspices. It is a comprehensive and authoritative statement of the facts, and there is a happy omen in testifying to the value of the League of Nations within a few hours of Armistice Day.

CARBUNCLES AND X RAYS.

THE indications for radiotherapy in the treatment of skin diseases are in many ways indefinite, but increasing experience shows that in this branch of treatment X rays are the most useful single remedy we possess. From this point of view the various dermatoses fall into three groups. The first comprises those in which radiotherapy is the only means of affording cure or relief, and includes mycosis fungoides, inoperable tumours, regional hyperidrosis, and certain types of localised pruritus. The second group, by far the largest, is made up of conditions which respond best and most conveniently to the action of the rays, and includes acne, certain types of eczema, keloids, trichophytosis, and ringworm of the scalp. In the third group we may put lesions which respond only in selected cases and in which the remedy should be applied only after the failure of the other methods; examples of these being rosacea, lichen planus, leucoplakia, warts and condylomata, chilblains, and certain stages of lupus. Possibly a fourth group might be added in which, although results may be expected, the required dosage is too high for safety. A notorious example of this is hypertrichosis.

On theoretical grounds the treatment of septic conditions by X rays has always been regarded as hazardous, and yet if we consider the case of acne, which can hardly be described as amicrobic, we are faced with an exception which furnishes the X ray clinic with a notable percentage of its skin patients. This disease, which in its pustular stage is the result of staphylococcal invasion, is always benefited by a few carefully chosen and spaced doses of X rays, which suggests that other staphylococcal infections may be equally amenable, and such considerations may have led to a trial of radiotherapy in carbuncle lately described by LIGHT and SOSMAN.[1] In their report these workers analyse the results in 50 cases, and frankly confess that "radiation is not consistently followed by improvement"—an admission which argues unusual scientific detachment. LIGHT and SOSMAN believe that any benefit observed was due to acceleration of the necrotic process in the carbuncle, "a softening in the indurated stage," with consequent prevention of extension, "in a few instances." The treatment was occasionally given with success after surgical measures had failed to check the infective process; on the other hand, there was one case in which both methods failed and the patient died. Pain was relieved in a few cases, especially those in which the carbuncle appeared on the lip or cheek. Of the 50 cases cited, 34 appeared to benefit, and 16 did not appear to respond at all. Eight out of the nine carbuncles on the face "responded excellently," and (which may be significant) the larger the lesion the less was it influenced favourably. On the information given, and with no simultaneous controls treated by other methods, it is obviously difficult from this paper to assess the value of X rays in the treatment of carbuncle. It would be interesting to observe the effect in a case with two carbuncles, or, since these are very rare, in multiple furuncular lesions, one or more of which might be treated by X rays for comparative purposes.

The dermatological attitude to X rays is nowadays undoubtedly less stringent than it used to be. It is well known that furunculosis of the neck in its most chronic and obstinate form (dermatitis papillaris capillitii of Hebra) is amenable to X rays, and that if boils continue to appear in one area only, the use of X rays is justifiable. In two conditions, however, the application of this remedy is by general agreement disallowed—namely, psoriasis, because the disease tends to recur whatever treatment is given and the repetition of X rays indefinitely is highly dangerous, and hypertrichosis, because it is technically impossible to destroy the hair follicle without damaging the blood-vessels and elastic tissue in the area irradiated. The doses advised by LIGHT and SOSMAN for the treatment of carbuncle are well outside the zone of danger, being only 30 to 50 per cent. of the erythema dose, both with and without filtration; and in the latest American text-book[2] it is asserted that for the deep type of carbuncle "radiation therapy is invariably of some benefit, preference being given to filtered X rays." We have as yet no truly specific treatment for this condition, and until one is provided there seems to be a relatively good case for trying X rays before resorting either to surgery or the diathermy current.

THE TREATMENT OF FRACTURES.

THE main principles guiding the treatment of fractures are now well established. For closed fractures the requirements may briefly be stated as immediate restoration of the alignment of the fragments, their maintenance in position until firm union has taken place, and early attention to the circulation and general function of the limb. For open fractures we must add thorough cleansing of the wound by excision in the first instance, and a minimum of interference afterwards. These requirements, which are interdependent, must be the basis of any treatment of injuries to bone. ARBUTHNOT LANE, with a clear conception of the essentials, introduced open reduction of fractures and fixation of the fragments by metal plates. His teaching focused attention on the then inadequate methods of treatment and brought about a demand for its improvement, coinciding with a

[1] Light, R. U., and Sosman, M. C.: New Eng. Jour. Med., Sept. 18th, 1930, p. 549.

[2] Andrews, G. C.: Diseases of the Skin, Philadelphia, 1930, p. 522.

more general use of X rays for diagnosis. But progress was somewhat prejudiced by a sharp division of opinion into two schools, the non-operative and the operative, since it was not realised then—and perhaps is not fully now—that the two apparently opposite methods are really part of the same treatment, inasmuch as failure of non-operative measures in any particular case leads to a demand for open reduction. Nevertheless, surgeons were stimulated to aim at perfection of alignment even when they preferred not to undertake an open operation which, except in the hands of the few, had its obvious dangers; the vast amount of material available during and since the late war has made it possible to do much work on the subject. Hence, many methods have been advocated, with a widely varying technique, and by their very number these have led to a certain amount of confusion, so that a feeling of uncertainty has been created among practitioners, away from the large centres, who are called on to deal with severe injuries in increasing numbers. An urgent demand has, therefore, arisen for means of treatment which are not too complicated and ensure a good prospect of success, and for this reason the procedure employed by LORENZ BÖHLER, of Vienna, will probably find an increasing number of followers. BÖHLER has demonstrated a technique by which the essentials of treatment can be carried out without undue difficulty, mainly by an extensive use of transfixion pins through which traction is exerted and maintained by embedding the pins in plaster-of-Paris casts.

Whatever may be said about methods of treatment, the desire to treat fractures is probably individual. Those interested in the subject usually evolve a technique of their own and get good results with it, but to impart their knowledge to others working under different and less favourable conditions is peculiarly difficult. Moreover, many practitioners suffer a considerable handicap through feeling that they have neither the equipment nor the time for the close personal attention necessary to success, and accordingly look on severe fractures with a feeling of apprehension. These various factors account for the frequent statement that fracture treatment has lagged behind the other achievements of surgery during the past 25 years. This statement is not wholly true; the advance has been real, and there are few fractures which still defy reduction by one means or another, while the period of incapacity has been definitely reduced by early physiotherapy. Nor does it seem likely, for the time being, that there will be any radical alteration in the accepted methods of treatment—though details of technique may improve—and further advance must therefore be looked for in the better organisation of cases in general, and easier access to the best treatment available, which does not necessarily depend on outstanding individual skill so much as on sufficient equipment and general capacity. In Vienna, mainly at the instigation of Prof. BÖHLER, the insurance companies have become interested in the organisation of fracture work; in the United States the whole problem is under consideration by a committee of the American College of Surgeons; and we hope that before long it may receive attention from the proper authority in this country too. The solution is probably not easy but it seems that there should be a fracture clinic in every large centre, which should be able to exert a measure of control over its district. Such centres should be in close association with the smaller and cottage hospitals, and it ought not to be impossible to organise a service which could send a trained team with full equipment to any point in its area. Some such scheme would not only lighten individual responsibility but would give a greater sense of security to all concerned, while incidentally it would afford a means of spreading instruction in treatment.

Finally, education of the public is called for. It is natural to feel irritation at any accident, especially if it may mean loss of work or prolonged incapacity without compensation, but too often this irritation leads to resentment at any loss of function and perhaps a claim for damages against those who happen to have been called in professionally. The fracture has been too long regarded as a "simple" affair in which perfect "setting" can be performed without difficulty under any circumstances. A better knowledge of the facts might finally induce greater coöperation in any scheme for improvement.

PUBLIC HEALTH CONGRESS AND EXHIBITION.

AN official programme has been issued of the congress to be held at the Royal Agricultural Hall, London, from Nov. 17th–22nd, under the auspices of the various municipal associations interested in public health administration. On Monday the congress will be opened by Mr. Arthur Greenwood, Minister of Health, and in the afternoon will be addressed by Sir Arthur Newsholme on Medicine and the State. On Tuesday morning Dr. W. M. Ash will introduce the School Medical Service, Dr. J. R. Kaye presiding; the subject on that afternoon is Physical Education in the new Senior Schools. On Wednesday morning Mr. I. G. Gibbon, of the Ministry of Health, will speak on the Place of the Open Space in Modern Social Economy; in the afternoon Prof. E. Mellanby will consider Maternal Mortality. Thursday will be given up to problems of mental health; Dr. T. Beaton will deal with Some Practical Aspects of the Problem and Dr. E. S. Litteljohn with the Social Problem of Mental Deficiency. On Friday morning the Sterilisation of the Unfit will be discussed from various sides by Dr. C. P. Blacker, Dr. W. F. Menzies, Dr. A. F. Tredgold, and others; in the afternoon Prof. C. S. Myers will give an address on Industrial Psychology in relation to Public Health. The various associations will hold their own meetings during the week. We call special attention to a discussion on Hospital Libraries initiated by the Joint Red Cross, on Nov. 21st, at 3 P.M., when Sir Arthur Stanley will preside, and among others Mr. L. G. Brock, Sir Alfred Davies, Dr. H. L. Eason, Dr. Doris Odlum, and Miss M. E. Sparshott will speak. An exhibition of machinery and materials used in the various public health services will be open every day from 10.30 A.M. to 9 P.M. Sir Frederick Willis is chairman of the organising council, the hon. secretary of which may be addressed at 13, Victoria-street, London, S.W. 1.

ANNOTATIONS

VIEWS ON FIRST CAUSES.

A LITTLE obscured by the title of A Medical Service for the Nation, a discussion has been going on in our correspondence columns as to the proportion of the nation which is economically worthy of individual medical attention. On one side Dr. Bodman has contended that the factors of heredity must influence very largely the potentialities for disease, irrespective of environment, and he has no doubt that a relative increase of ethically and men tally inferior people is taking place. On the other hand, Mr. Layton does not believe in this increase, and challenges the data from which it has been deduced. He can see no sign of deterioration, and maintains that every Englishman comes from equally good stock and stands the same chance of having had a good ancestry whatever the financial position or social status of his immediate forebears may have been. In his Lloyd Roberts lecture, delivered in the medical school of Manchester University on Friday, Nov. 7th, the Bishop of Birmingham (Rt. Rev. W. Barnes) closely examined these rival views. He dealt specially with the inheritance of feeble-mindedness, which he described as the most socially dangerous type of mutation which has arisen in humanity. Why, he asked, is the gene, or group of genes, producing feeble-mindedness now so widespread in the population? And his confident answer was that our human instincts have caused us to modify the harsh social conditions under which many of the mentally defective would have been eliminated as soon as a new mental-defect mutation appeared. In nature deleterious mutations are constantly arising, and as constantly being suppressed by a hostile environment. Dr. Barnes has been able to discover no evidence that mutations dominate the trend of evolution. They merely appear; the power of the environment does the rest. As he sees the matter, good and evil arise with equal frequency in the variations associated with heredity, but the creative process of which we are products is active through the environment. He felt surprise at his inability to discover in the genetic mutations which are the raw material of evolution any moral quality; but perhaps, he added, the conclusion ought not to surprise us, for whenever we think to discover God at work further knowledge reveals a mechanism behind which He remains hidden. He concluded his lecture, however, by ranging himself with the thinkers who cannot fit righteousness and truth into a mechanical universe. It is significant that almost at the same time as Dr. Barnes was surrendering evidence of design in the gene's mechanism, the Rede lecturer was finding it in the universe outside. In his lecture delivered at Cambridge on Nov. 4th, Sir James Jeans pictured the birth of the solar system and found it incredible that the universe can have been designed primarily to produce life like our own. Had it been so, he said, surely we might have expected to find a better proportion between the magnitude of the mechanism and the amount of the product. He went on to describe the outstanding achievement of twentieth-century physics as a recognition that we are not yet in contact with ultimate reality. In terms of Plato's simile, imprisoned in our cave we can only watch the shadows on the wall. We have no extraneous standards against which to compare them. The real essence of substance, in Locke's phrase, is for ever unknowable, but yet by a very different route modern science has been leading the Rede lecturer to a philosophy summed up by an earlier bishop in the words, "All the choir of heaven and furniture of earth . . . have not any substance without the mind." The river of knowledge, said Sir James, has made a sharp bend in the last few years. Mind no longer appears as an accidental intruder into the realm of matter. We are beginning to hail it as the creator and governor of the realm of matter. Not, he added, our individual minds, but the mind in which the atoms, out of which our individual minds have grown, exist as thoughts; the universe shows evidence of a designing or controlling power that has something in common with our own individual minds.

SECRETION OF MUCUS BY THE COLON.

THE lining membrane of the colon is particularly rich in mucin-secreting or "goblet" cells, which are placed thickly on the inner layers close to the lumen of the bowel. While mucus is not obviously present in normal stools, small amounts are usually found coating scybala and inspissated masses of fæces in constipation. Large quantities of mucus may be passed in the condition known as mucous or mucomembranous colitis, and at times strings or casts are expelled with or independently of a motion. Following Nothnagel, this syndrome is generally attributed to hypersecretion on a nervous basis—a secretion neurosis. The casts consist of pure mucus with little cellular content; if leucocytes or many epithelial cells are present the condition is regarded as inflammatory or true colitis.

Certain of the glands in the upper alimentary tract, the salivary glands, for instance, and the glands of the bronchial mucous membrane, are known to be under the influence of the nervous system; secretion of mucus can be obtained by stimulation of the appropriate nerves or by administration of pilocarpine, while drying up of secretion is brought about by atropine—these drugs acting through the nervous system. H. Florey[1] now brings forward evidence that the secretion of mucus in the colon is a result of direct mechanical or thermal stimulation of the goblet cells, obtained without the intervention of the nervous system. It has been impossible by histological methods, he points out, to demonstrate nerves running to the epithelial cells of the colon. Portions of the colon, isolated by surgical means, and observed through fistulæ, secrete mucus in small amounts only, but much secretion of mucus is obtained when the mucosa is stimulated mechanically by rubbing or even by exposure to air, and chemically by such substances as mustard oil. This secretion is limited to the area which has been stimulated, and other parts of the colon are not affected, as they would be if nervous reflexes were involved. Indeed, a profuse secretion of mucus is seen in response to rubbing or mustard oil in a portion of colon grafted into the abdominal wall and isolated from its intrinsic blood-vessels and nerves by section of these. Florey obtained no evidence that stimulation of either the nervi erigentes or the sympathetic nerves to the colon is capable of stimulating the goblet cells to produce mucus. Large doses of pilocarpine injected intravenously and acting over prolonged periods are

[1] Brit. Jour. Exper. Path., 1930, xi., 348.

required to evoke secretion of mucus in the colon; and in such cases the goblet cells may be stimulated mechanically as a result of the violent bowel movements produced. On the other hand, secretion of mucus is readily obtained by mechanical or chemical stimuli applied locally to the colonic mucosa. Accompanying this secretion there is a local vascular dilatation, and it is of interest to study these phenomena in a little more detail in order to see if they may be brought into line with the results obtained by Sir Thos. Lewis in local reactions of the skin in the early stages of inflammation. Lewis has shown that in the skin the vascular and other phenomena of inflammation are brought about through the medium of a histamine body produced as a result of protein breakdown by the noxious stimulus. Florey's observations have led him to conclude that the secretion of mucus and the vascular dilatation are independent phenomena. He found that the injection or local application of histamine acetylcholine, adenosine, and peptone solutions failed to stimulate mucus-production from goblet cells. It appears, then, that the goblet cells directly react to the insult of the noxious agent, in contradistinction to the accompanying vascular reaction which, judging from the results on skin, is due to the liberation of some histamine-like body.

Florey's paper is full of interest and his thesis is well argued. But clinicians, while agreeing that the goblet cells of the colon pour out their secretion in response to local stimulation, will perhaps hesitate to subscribe to his contention that the secretion of mucus in mucous colitis is independent of the nervous system. The ætiological factors in mucous colitis are obscure enough, no doubt. It is hardly a clinical entity, but rather a collection of symptoms in which the underlying factor is an instability of the reactions of vasomotor, cutaneous, and sexual systems as well as the alimentary. That the nervous system takes no part in this symptom-complex is a view that cannot lightly be accepted on the results of some negative laboratory experiments.

VICARY'S PREDECESSORS.

Thomas Vicary was Serjeant Surgeon to King Henry VIII. and Master of the Barber-Surgeons Company, whose modern counterpart endows a lectureship in anatomy or surgery to commemorate his name. The lecture this year was delivered on Nov. 6th, in the theatre of the Royal College of Surgeons of England, by Prof. G. E. Gask, who took as the title of his lecture "Vicary's Predecessors," his object being to rescue from oblivion the names of those men, famous in their day, who had served the sovereigns of this country before Thomas Vicary. The earliest appointment given was that of Baldwin, Abbot of Bury St. Edmunds, who was the medical attendant of Edward the Confessor and described as a man "gretly expert in the craft of medycyn." At first the royal attendants were described as *medici regis*, surgery not having then been divorced from medicine, but in the reign of Henry III. the appointment bore the title *chirurgicus regis*. "Master William the King's Surgeon," was then presented to "the Church of Houkerinton, in the same diocese (Lincoln) in the King's gift by reason of the land of Thomas, son of Walter being in his hands." This Master William may be regarded as the first of Vicary's predecessors, and from this time on there is a continuous record of regal surgeons. Of some little is known but the name and the salary, ranging from £10 to £40 a year, to which were often added gifts of livings and lands as a reward of faithful service. Thomas de Weseham, surgeon to Henry III., was remarkable among other things for being granted a die for minting silver pennies, some of which are in the possession of Mr. L. A. Lawrence, F.R.C.S., and were shown by the lecturer. Expeditions of war during the reigns of Edward I., Edward III., and Henry V. gave the King's surgeons functions which foreshadowed the beginnings of an Army medical service; the senior of the King's surgeons, the Serjeant Surgeon, was made responsible for supplying a surgical staff and for collecting medical supplies. Prof. Gask illustrated his lecture with lantern slides of drawings from old manuscripts, an interesting exhibit being a surgical instrument case of fine craftmanship, lent by Mr. A. E. Williams, bearing the Royal Tudor Arms and the arms of the Barber-Surgeons Company. This case, it was suggested, may have been presented to Vicary by Henry VIII.

PROPHYLAXIS OF SYMPATHETIC OPHTHALMIA.

Dr. Albert Holdener, assistant in the Bürgerspital at Zug, gives an account[1] of five cases treated in the eye clinic at Zürich, in which sympathetic ophthalmia of the sound eye occurred after early enucleation of an injured eye. In the first case the wounded eye was enucleated 14 days after the injury when the sound eye was completely normal, both to external and to slit-lamp examination. Twenty-two days after the enucleation signs of slight irido-cyclitis supervened, confirmed by the slit lamp, but under energetic treatment with atropine, mercury, and salvarsan it ran a mild course without ever materially affecting the vision, and in ten weeks it was practically well. The second case was that of a man of 22 whose left eye had been blinded by an arrow wound at the age of 10. This eye became irritable and when the patient was admitted to hospital it was in a condition of secondary glaucoma. A trephining was performed and following this an extraction of the lens, but the eye got worse and then at last the patient gave his consent to having it enucleated. After three weeks in hospital the patient was discharged, but 12 days later two punctate spots appeared on Descemet's membrane of the remaining eye. In another fortnight, the signs of sympathetic infection being unmistakable, he was readmitted and intensively treated as in the previous case with such success that he was discharged in a month apparently cured and with normal vision. The third case was that of a man of 28 whose right eye was wounded by the horn of a cow. After three weeks' treatment, including removal of a prolapse of the iris and suturing of a scleral wound, the eye was removed on account of sympathetic danger, which pathological examination proved to be present. At this time there were no abnormal signs in the left eye, but a fortnight after the enucleation, spots on Descemet's membrane were detected which later on increased along with other signs of sympathetic infection. After six weeks' energetic treatment, however, the eye was cured and the patient was discharged with an eye possessing normal vision. These cases enforce the lesson that when an eye receives a wound involving the ciliary body, and more especially when the wound is so serious as to involve total loss of sight in the affected eye, it is dangerous to postpone enucleation even though there may be no sign, detectable by the slit lamp, of commencing infection in the second eye.

[1] Schweiz. med. Woch., Sept. 20th, p. 896.

Further, that when an eye is retained after being blinded by a wound, it is never certain, even many years after the original injury, that sympathetic trouble may not supervene as the result of a slight exciting cause. They also illustrate the encouraging fact that when a timely enucleation of an injured eye has been performed—i.e., before there is any sign even with the slit lamp of the infection having spread to the second eye, even if that eye does later show definite signs of sympathetic cyclitis—the prognosis is far more favourable than when enucleation has been deferred until actual detection of signs of infection in the second eye.

THE BARBITURATES IN LABOUR CASES.

AMYTAL (iso-amylethyl barbiturate) and sodium amytal have, so far as we know, not yet been used as analgesics in confinements in Great Britain. A preliminary report[1] from the Mayo Clinic, therefore, although based on under 50 cases, is valuable. For the results seem to justify further trial and the hope that here is a drug which can be given orally and which, while it affords analgesia, not only does not delay but tends to facilitate the progress of labour. The drug is given in divided doses, grs. 9 being regarded as the maximum dose. Labour is shortened because of the relaxation produced in the soft parts. The drug is to be taken late in the first stage of labour, grs. 3 being given as the first dose. If, in the course of the next four hours, the tone of the muscles is found to be returning and the patient is worried by the uterine contractions, the dose is repeated. The baby appears to be always unaffected by amytal. J. S. Lundy states that after grs. 13 had been given for a Cæsarean section the infant cried on delivery from the uterus.

PARALYSIS OF THE LARYNX.

Sir Felix Semon published in 1881 certain "Clinical Remarks" on paralysis of the larynx; he stated that if there was interference with the recurrent laryngeal nerve, either peripherally or at the centre, the first result of injury was paralysis of the abductor fibres supplying the posterior crico-arytenoid muscles, which open or dilate the glottis; the adductor muscles, constituting the sphincteric group, which close the glottis, survive for a longer time. This observation, known as Semon's law, was the subject of the Semon lecture delivered in the University of London on Nov. 6th by Mr. V. E. Negus. The lecturer devoted his attention to the evidences of comparative anatomy and physiology, for only by examining the origin of lungs, he said, could the facts be approached without confusion. As is well known, some fish swallow air, while others use a specialised alimentary diverticulum for breathing. Lung-fish or dipnoi have lungs, by means of which they are enabled to carry on respiration out of water, and to store up a reserve for use below the surface. In order to protect the lungs a valve is present at the mouth of the air tract in the form of a larynx, and a band of sphincteric muscle is the important constituent of this valve, since it has the vital function of preventing entrance of food or water by virtue of automatic closure. Because of its early origin and vital importance, the function of this band of muscle survives when other functions of the larynx are lost. Semon's law is thus supported and the influence of early origin has its effect in man, even though his larynx has undergone extensive modifications. In amphibians, reptiles, and birds the larynx is provided with lateral cartilages, but the sphincteric muscle still has a vitally important function in closing the glottis, especially in aquatic species. Mammals with a simple type of larynx must close the glottis during deglutition, but herbivorous species and also cetaceans have a special mechanism by means of which liquid or semi-liquid food passes on either side of the spout-like larynx while respiration continues; in animals of this type the sphincteric muscle loses in importance. In man, however, the lateral food channel is inefficient and the larynx must be closed during swallowing. The sphincteric girdle is divided into two paired and one single muscle, but it still serves a protective function; its nerve-supply is resistant to injury because of its mode of origin. There are slight variations in nerve-supply, which do not affect the truth of Semon's law.

To study the dilator muscles, continued Mr. Negus, a start is again made with animals with a simple type of larynx. In the Amazon mud-fish there are no muscles to open the glottis; in the African lung-fish circular fibres corresponding to the pharyngeal constrictors of man serve to open the glottis, while air is forced down the trachea by contraction of these muscle-fibres. Amphibians and reptiles have dilator muscles attached to the tips of the lateral or arytenoid cartilages, and arising from the cricoid ring; these muscles belong to the larynx and open the glottis in the form of a triangle, with the base directed forwards. In mammals and in man the larynx is tilted in order to straighten the air tract and the arytenoid cartilages are necessarily shorter than in lower species, this change leading to backward migration of the dilator fibres. The dilator muscles thereby work with added mechanical advantage; they open the glottis by rotating and pulling apart the arytenoid cartilages, the aperture assuming a triangular shape, with the base behind. Because of later inclusion in the larynx and because of unimportance in primitive types of larynx, the dilator fibres are more vulnerable than those supplying the sphincteric group.

Consideration of the primary functions described appears to explain the reasons underlying Semon's law, and from these Mr. Negus passed on to consider other and secondary functions of the two groups of muscles. A secondary function of the muscles closing the larynx is retention of air in the lungs, and to supplement the action of the sphincteric muscles some animals possess in the larynx valves of a mechanical nature. The dilator muscles also have an independent secondary function—namely, that of holding the glottis open during simultaneous respiration and deglutition, as is well illustrated in whales and dolphins. Neither of these two secondary functions is important in man. During phonation both groups of muscles are in action; the function is not a primary one and has no bearing on the truth of Semon's law, although Semon himself laid stress on it, to the confusion of the issue. Respiratory movements are carried out by mammals and by man, but this function again has no direct bearing on the question. Fixation of the thorax is assisted in arboreal species and in man by closure of the vocal cords. In conclusion, said Mr. Negus, the primary functions of the two groups of muscles must thus be separated from the secondary. They are found to consist of automatic protective closure of vital importance, carried out by the sphincteric group, and automatic opening for respiration, attained by contraction of the abductor or dilator muscles—the latter function being of little

[1] Proc. Staff Meetings, Mayo Clinic, Vol. v., No. 39 p 279.

importance in lower species, but of great importance in man, because of the valvular nature of the glottis and the dangers which result from sucking together of the vocal cords during inspiration. The fibres supplying the dilator or abductor muscles are more vulnerable than those supplying the sphincters, because of the later origin and originally inferior importance of the dilators.

CATHETER FEVER.

THE mechanism of catheter fever has always been something of a mystery. It is liable to occur after the urethra has been injured in persons whose urine is heavily infected with bacteria, but the precise relation of the bacteria to the fever has never been clearly made out. A contribution to the last number of the *Journal of Pathology and Bacteriology* (vol. xxxiii., p. 871), by Mr. F. J. F. Barrington and Dr. H. D. Wright, is an admirable example of collaboration between surgeon and bacteriologist which throws new light on the subject. Briefly, their results show that the blood stream is often invaded by bacteria immediately after the passage of bougies and again immediately after infected urine is passed over the injured surface. This bacteræmia is of very short duration and at the time when the patient feels ill or has an actual rigor the blood is again sterile. Thus, in one case, dilatation after an external urethrotomy was done at 10.40 A.M.; at 10.45 A.M. a blood culture was positive (*B. coli*): urine was first passed at 4.10 P.M. and at 4.20 P.M. the blood again gave *B. coli*. At 5.25 P.M. the patient had a mild rigor, and at 5.30 P.M. the blood was found sterile. In several instances blood cultures were made immediately before operation with negative results, while positive cultures were obtained within five minutes of dilatation. The effects of this bacteræmia do not appear for some time; the rigors are, no doubt, due to the products of destruction either of tissues or of the bacteria themselves, either of which takes time to happen, and when the rigor is going on the blood will probably be found to be sterile. There is therefore no reason to doubt that catheter fever is bacterial in origin and that one may expect to diminish its incidence by reducing to a minimum the injured absorbing surface in the urethra (which is practicable) and controlling the infection of the urine (which is not).

THE DOCTOR'S WIFE.

"DOCTORS have considerable difficulty in getting married," says Joyce Dennys; and we fear this difficulty may be even greater when everyone has read her poignant book on "Mrs. Dose, the Doctor's Wife."[1] Her seven heroines range from Lady Tonsil, who made her husband's reputation, to Emily Bragge, who let the brass plate get dirty. This, the author points out, is "one of the most terrible things a Doctor's Wife can do. I have known Doctor's Wives, when they and their whole households have been laid up with influenza, creep from their sick beds in the early morning and totter out to the gate with the Brasso, and you will often see a Doctor's little Bride, running out with a duster between showers." But most of the tales are about young women like poor little Mrs. Tibia, who do their utmost to please the senior partner's wife and vow that their husband's career shall never suffer by their unguarded behaviour.

"The people gathered round her, and it was obvious to the meanest intelligence that medical attention must be obtained without delay. 'Where is your Husband?' they said, pressing round her and keeping out the fresh air. 'Tell us, where is your Husband?' As a matter of fact, Doctor Tibia was playing golf, but she had learnt her lesson. 'I am not . . . at Liberty . . . to Say,' whispered little Mrs. Tibia, and died."

A similar fate nearly overtook Mrs. Septum, whose husband disliked illness in the home; and no surgeon should neglect the account of her sufferings at the hands of Sir Cadogan Colon, who was always frightfully busy. Even more heartrending, perhaps, were the troubles of Mrs. Base and Mrs. Digit, two school friends whose husbands practised in a small country town and had a very serious quarrel. "The Quarrel was all about a Patient, and one Doctor thought the other Doctor had stolen the Patient away from him. Afterwards the Quarrel became more complicated, but that is how it began." The description of this and other situations shows a sharp insight into medical domestic affairs, and the book is illustrated by the author as amusingly as it is written. The profession will long be grateful for this charming satire, and the wives of practitioners may come to regard it as an "Uncle Tom's Cabin" which draws long-delayed attention to their bondage.

FOG AND ITS MEASUREMENT.

THE fifteenth report[1] of the Atmospheric Pollution Research Committee contains a welcome indication of increasing interest in the purity of the air we breathe. Six new observation stations were set up during the year, making a total of 81 now in operation. The report contains the data for deposit from the air at all these stations, and the results of some special investigations. To take an example, the relation of domestic to industrial smoke, which had been previously examined in London and found to be about 2·5 domestic to 1 industrial, was examined for Glasgow on the same basis, when the ratio for weekdays (excluding Saturdays) was found to be 3·6 domestic to 1 industrial. Of the other special subjects under investigation the measurement of water in fog is perhaps the most interesting. This was commenced some years ago (see the ninth report), when the effect of London fog in obstructing light was being examined. It was realised then that, while the number of solid particles suspended in the air during a fog could be estimated with some degree of accuracy, there was no means available for measuring the amount of suspended water particles. The obstruction of light being due to the effect of both solid and water particles, it became necessary to try to find a method of estimating the latter. A method was devised by Dr. J. S. Owens, based upon the increase of pressure caused by vaporising the suspended water particles.

The measuring instrument consists of two exactly similar vessels side by side and connected only by a U-tube containing liquid paraffin, to act as a pressure gauge. One of these vessels has an attachment at the top to admit air through a calcium chloride drying tube; the other vessel, which has a wide neck, closed by a plug, is filled with the fog-laden air after the instrument has attained the surrounding temperature. Both vessels are at this stage open to the air, the pressure in both being the same. The entrance to each vessel is next closed. We have now in one vessel a sample of fog-laden air, in the other a similar sample of air containing

[1] Mrs. Dose, the Doctor's Wife. Written and illustrated by Joyce Dennys. London: John Lane the Bodley Head Ltd., 1930, pp. 140, 5*s*.

[1] Investigation of Atmospheric Pollution. Report on Observations in the year ended Mar. 31st, 1929. Department of Scientific and Industrial Research. H.M. Stationery Office. Pp. 64. 3*s*. 6*d*.

no liquid particles. The instrument is then placed in a hot water bath, the temperature of which is raised until the manometer shows no further change of pressure, when the difference in pressure between the two vessels gives a measure of the quantity of water drops vaporised, and thus of the quantity present in the fog. For example, if the pressure difference is equivalent to d mm. of mercury, the weight of water drops present in grammes per cubic metre is $289\frac{d}{T}$, T being the absolute temperature of the water bath in degrees Celsius.

Many difficulties were encountered in the operation of this instrument owing chiefly to the difficulty of preventing small leakages. It was, however, tried out with reasonably satisfactory results, and is now under investigation at the National Physical Laboratory, where the results are being compared with those obtained by ordinary gravimetric methods and with those of another form of instrument devised by Kohler. In Kohler's method the fog-laden air is drawn continuously through a tube, where it is warmed until the suspended drops are all evaporated, and the total moisture content, after such evaporation, is measured by a wet and dry bulb hygrometer. A measurement of the humidity before evaporation compared with that after, gives the data for ascertaining the quantity added to the air by evaporation of the drops. Kohler's method obviously depends on the accuracy of the wet and dry bulb hygrometer as a means of estimating the water vapour present in the air.

There is a general impression that the old-time London fog is disappearing, and a comparison of the annual reports shows that there was a fairly steady reduction in the amount of impurity deposited in London from 1915 up to 1921–22, the quantity falling (in round figures) from 400 to 300 tons per square mile. No doubt this resulted in a reduction in the smoke fogs. Since 1921, however, the deposit has remained nearly constant, nor has the amount of suspended sooty matter in London air diminished much during the last ten years. The maximum weekday concentration at Westminster, which usually occurs in the forenoon, has during the whole of this period averaged 150–200 milligrammes per hundred cubic metres. It is not to be assumed, therefore, that the air of London is steadily improving, and that our efforts to purify it may safely be relaxed.

THE VALUE OF MERCUROCHROME.

THE value of mercurochrome as a therapeutic agent formed the subject of a discussion at a meeting of the Section of Therapeutics of the Royal Society of Medicine on Oct. 11th, under the presidency of Dr. Philip Hamill. Apparently one of the chief difficulties experienced by those who wish to estimate its effect lies in the difficulty of obtaining a commercial product of standard composition. Dr J. H. Burn, who has recently tested the toxicity of eight different samples of mercurochrome by injection into mice, was able to produce figures showing a wide range of variation from the theoretical product. At least five of these eight samples were prepared by different firms; analysis showed that while, theoretically, mercurochrome should contain 26·7 per cent. of mercury, 21·3 per cent. of bromine, and no acetate, one product out of the eight contained as much as 40·9 per cent. of mercury, only 11·4 per cent. of bromine, and 7·5 per cent. of acetate, and the remainder contained proportions of these substances which showed wide deviations from the theoretical values. By injecting different quantities of each sample into large numbers of mice he was able to estimate the average lethal dose of each product—that is to say, the number of milligrammes per kilogramme of body weight which would suffice to kill 50 per cent. of the mice injected. He found that the least toxic sample contained the amount of mercury which approximated most nearly to the theoretical value, but that the toxicity of any sample by no means ran parallel to the proportion of mercury. He pointed out that it was impossible to assess the value of mercurochrome until the medical profession had insisted on the production of a standardised preparation by the manufacturers. Sir William Willcox felt that this was an argument for relegating the use of mercurochrome to a time when there was no danger in its use, either to the healthy person or to the patient in dire extremity; but the majority of speakers, if not enthusiastic, were able to award it the tribute of the old Scottish woman to her doctor, and to say that at least it did no harm. Mr. K. Heritage, however, had found it to be of value given intravenously in cases of appendix abscess which ran a swinging temperature after operation. Usually the temperature settled after the first injection, and later rose again, but two or three doses sufficed to bring about complete lysis. It was also effective, if used to wash out the bladder, in cases of intractable chronic cystitis, especially in women, but as a wash for the renal pelvis in pyelitis it had given disappointing results. Some good effects had been observed by Mr. L. C. Rivett from the use of local applications of mercurochrome in chronic cervicitis, but as an intravenous injection for puerperal sepsis he had found it to be disappointing, especially where the infecting organism was a hæmolytic streptococcus; in the presence of a *B. coli* infection there was a greater chance of benefit to the patient from its use. No other outstanding examples of the value of mercurochrome were quoted, and apart from chronic cervicitis, appendicitis with abscess, and cystitis, the feeling of the meeting was apathetic rather than laudatory.

THE Council Dinner of the British Medical Association took place on Tuesday evening last at the Hall of the Association, when Dr. Brackenbury presided over a large company and many distinguished guests. A report of the function will appear next week.

EXHIBITION OF OXFORD BOOKS.—An exhibition of Oxford Books, in connexion with the centenary of the removal of the University Press at Oxford in 1830 from the Clarendon Building to its present site opposite to the Radcliffe Observatory in Walton-street, was opened on Nov. 6th at the Old Court House, Marylebone, W., the new premises of Messrs. John and Edward Bumpus, Ltd. The exhibition will remain open till the end of January, 1931, between the hours of 9 A.M. and 6.30 P.M. on weekdays, with the exception of Saturdays, when it will close at 1 P.M. It shows the developments in printing of the University for the past 100 years and the conditions which prevailed in the early days of Caxton.

CHELSEA CLINICAL SOCIETY.—The annual dinner of this society was held at the Rembrandt Rooms on Oct. 28th under the chairmanship of Mr. F. J. McCann. Ninety-six members and guests attended, the latter including Lord Riddell, Sir Thomas Horder, and the presidents of five kindred medical societies. Letters apologising for their absence were received from Lord Moynihan, Sir John Rose Bradford, Sir H. Curtis Bennett, and the Secretary for Education to the Government of India. The first dinner meeting of the session will be held at the same place on Tuesday, Nov. 18th, when Dr. Anthony Feiling will open a discussion on the Treatment of Headache. All inquiries should be addressed to Mr. Rugg-Gunn, 49, Harley-street, W. 1.

MODERN TECHNIQUE IN TREATMENT

A Series of Special Articles, contributed by invitation.

CCCXI.—NEONATAL ASPHYXIA.

PART II.

IN quite a different category from the cases of blue asphyxia discussed last week are those infants born in a state of

White Asphyxia.

Here the child is in a condition of shock. It is essential to realise this fact, and then the paramount need for warmth and quietness will be realised. No one would treat a case of post-operative shock with very poor respirations by smacking the patient, sprinkling him with cold water or waving his arms about in the movements of artificial respiration. Why, then, should the white baby, who is suffering from a comparable degree of shock, be subjected to such barbarous methods?

Warmth.—Instead, the infant should be separated from the mother by dividing the cord between two pairs of Spencer Wells forceps at fully six inches from the umbilicus. The child must then be warmed. For this purpose there is much to commend dry heat by warm blankets, but in practice it is more convenient to place the child in something which can immediately be prepared—viz., a bath at a temperature of 105° F. Whenever possible this temperature should be checked by a thermometer, for the rubber-gloved hands of the doctor and the skin of the midwife used to very hot water seem to be incapable of appreciating as uncomfortably hot anything less than, say, 110° F., which temperature would be a menace to the infant. If a thermometer is not available, the well-known trick of using the skin of the elbow to test the heat of the water is better than nothing, since any temperature dangerously hot for the infant will be appreciated as unpleasant by this means. Furthermore, the temperature of the water must be maintained at 100° F. to 105° F. This is well worth bearing in mind, since in the stress of other activities it is easily forgotten, and thus one may let the water become dangerously cold for the child.

Extraction of mucus.—The next essential is the thorough clearing of the air passages by a mucus extractor in the manner already specified, and at the risk of tiresome repetition it must be stressed that this step is absolutely necessary and must be performed with care, gentleness, and completeness. The infant's tongue is now held forward, and since it may have to be maintained in this position for some time, a suture passed through the tongue near the tip from side to side would seem to be the most suitable method of achieving this. It must be remembered that time is an important factor in the treatment of these cases, since prolonged apnœa increases the shock from which the infant is suffering. There is little time lost in passing a stitch and thus securing an efficient tractor, since suture materials—preferably fine silk-worm gut—and needles should always be ready to hand. Gentle rhythmic traction on this suture will now serve not only to open up a good airway but also, if performed at intervals of, say, ten seconds, to act as a stimulant to respiration without increasing shock.

Drugs.—It was stated above that the cord should be clamped and divided fully six inches from the umbilicus. This is desirable because it is found that alpha-lobeline injections are of great assistance in the treatment of white asphyxia. Alpha-lobeline can be obtained in solution in ampoules, and of this solution about six minims should be injected into the umbilical vein. A blue bulge is selected and the injection made into this. Then the drug is massaged into the fœtal circulation by compressing the cord from the clamp towards the umbilicus. Another stimulant which may be given instead is Coramine, of which 10 to 15 minims may be injected intramuscularly; in addition brandy may be wiped over the lips, gums, and cheeks in the usual manner.

STIMULATION OF CIRCULATION AND RESPIRATION.

It is found in practice that the result of such treatment as has been described is that the child sometimes begins to gasp and that these gasps recur at gradually lessening intervals. In other cases no improvement seems to take place. The needs of such an infant are obvious. First, there is adequate circulation of the blood; secondly, oxygen is required as a food for the respiratory centre; and thirdly, carbon dioxide is required to stimulate that centre. How can these needs be supplied? A very useful lesson can here be learnt from an experimental animal like the cat. If such a cat dies it may be stated, on the authority of Sir Leonard Hill,[1] that some degree of even peripheral circulation can be maintained by rhythmically compressing, first the abdomen, whereby some blood is squeezed into the right side of the heart, and then (laterally) the thorax. By this latter manœuvre not only is some blood pushed round the pulmonary circulation and thence into the systemic one, but also the recoil of the chest wall may inspire some air into the lungs.

It would seem advisable to attempt to treat the "white asphyxia" case in the same way—namely, by gentle rhythmic compression first of the abdomen and then of the thorax, and with very little force.

Any other manœuvre in the performance of artificial respiration in the accepted sense of the phrase is absolutely contra-indicated as harmfu'. The temptation to perform artificial respiration must be recognised; it is hard to refrain from other movements designed to draw air into the lungs of such an infant when it appears to be dying despite the treatment here detailed. But if the child is going to recover it will do so without the application of what can only be described as ill-judged violence. And it is certain that the extra shock induced by such violence has been the direct cause of death in many infants who otherwise would have survived.

While still considering the white baby's need for an improved circulation, it should be recorded that in cases where the defect is due to raised intracranial pressure, improvement is said to have been obtained by lumbar puncture. This has even been advised as a routine for all such cases, and in my very limited experience of this treatment it has seemed of value. But in general it is probable that the manipulations required would do harm more than enough to counterbalance the good that might be derived, except in carefully selected cases—and the selection is difficult to make.

The next two great needs of the type of baby under consideration are oxygen and carbon dioxide. The

[1] Personal communication to the Hon. Medical Staff of Queen Charlotte's Hospital.

supply of these gases in a suitable manner is a matter of considerable difficulty. With elaborate apparatus this can be overcome, but the practising obstetrician is up against a very difficult problem. In obstetric hospitals it is usual now to find cylinders containing a mixture of 6 (or better, 7) per cent. carbon dioxide in oxygen. A gentle stream of the mixed gases can be obtained from such a cylinder, and by fitting a rubber delivery tube continued by a soft rubber catheter this mixture of gases can be delivered to the child's nasopharynx by passing the catheter along the nostril. It would be a great convenience if there were an apparatus on the market, similar to the Fallopian tube insufflation apparatus, by which carbon dioxide and oxygen in the required proportions could be delivered from a "sparklet" cylinder through a reduction valve, and thus be available for transmission in a manner similar to that above described to the nasopharynx of the white baby. Even then one would be largely dependent on the active respiratory efforts of the child for the oxygenation of the blood circulating as the result either of the natural heart action or of the rhythmic pressure alternately on abdomen and chest as described above; but one would not be entirely dependent on respiration efforts, for the rhythmic pressure would cause at least some disturbance of the gases in the upper respiratory passages, and if a gentle stream of oxygen and carbon dioxide is passing into the nasopharynx a sufficiency of these gases would probably be diffused and absorbed and would be conveyed by the circulating blood, thus acting as a food and as a stimulant to the respiratory and other medullary centres.

In saying that these are the only satisfactory methods by which respiratory exchange can be established, intratracheal insufflation is not forgotten, but is dismissed as being impractical. And with regard to "mouth to mouth" respiration it is my belief that such a manipulation is not only rarely of use, in that it forces air into the child's stomach rather than into its lungs, but is also harmful in that it increases shock. Moreover, when air is thereby caused to enter the child's lungs, harm is sometimes done by rupturing the pulmonary alveoli.

CONCLUSION.

To sum up in the words of Appendix II. of the Medical Research Council's publication on Child Life Investigation,[2] the main points in the treatment of asphyxiated new-born infants are: (1) the avoidance of all violent attempts at resuscitation; (2) absolute rest, warmth, and quiet; (3) the immediate toilet of the air passages so as to remove mucus, meconium, and liquor amnii; (4) the supply of a mixture of oxygen and carbon dioxide; (5) reduction of intrathecal pressure by withdrawal of cerebro-spinal fluid in certain cases, particularly those with signs suggestive of intracranial bleeding.

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[2] Special Report Series, No. 145, p. 79.

SPECIAL ARTICLES

THE POSITION OF NURSING: PAST AND PRESENT.

LAST week we announced THE LANCET Commission of Inquiry into conditions of service of the nursing profession, with special reference to the recruitment of suitable student nurses. The Commission is not yet quite complete, but the following have consented to serve:—

Prof. HENRY CLAY, M.A., D.Sc., late Professor of Social Economics in the University of Manchester.

Miss R. E. DARBYSHIRE, R.R.C., Matron, University College Hospital.

Miss L. CLARK, M.B.E., R.R.C., Matron, Whipps Cross Hospital.

Dr. ROBERT HUTCHISON, F.R.C.P., Physician to the London Hospital and to the Hospital for Sick Children, Great Ormond-street.

Prof. F. R. FRASER, M.D., F.R.C.P., Professor of Medicine in the University of London, Physician to St. Bartholomew's Hospital.

Mr. A. LISTER HARRISON, J.P., Chairman, Committee of Management, Metropolitan Hospital.

Miss M. D. BROCK, D.Litt., Headmistress, the Mary Datchelor Girls' School.

Mrs. OLIVER STRACHEY, Chairman, Employments Committee, London Society for Women's Service.

Miss EDITH THOMPSON, C.B.E., Member of Council, Bedford College, University of London.

Sir SQUIRE SPRIGGE, M.D., F.R.C.P., the Editor of THE LANCET, with Dr. M. H. KETTLE, an assistant editor, as honorary secretary. The name of the chairman will be announced later. Any organisation or individual wishing to provide evidence for the Commission to consider, or to offer suggestions relating to the improvement of conditions of service of the nursing profession, is asked to communicate with the hon. secretary at THE LANCET offices.

1871.

The interest taken by this journal in the conditions of service of the nursing profession is of no recent date. In 1871 the conditions of night nursing in some London hospitals were investigated by a commissioner representing THE LANCET. The coöperation of several hospitals was enlisted, and visits were paid to the wards between 9 P.M. and 1 A.M. Of the conditions described, those of more permanent interest concern the numerical sufficiency of the staff in relation to the gravity of the cases and the structure of the wards, and the hours of duty. Other points which were important 60 years ago, such as the modes of obtaining additional aid in cases of emergency, or the regulation of the warming and ventilation of the wards at night, have now, with the ubiquity of electric bells, telephones, and central heating arrangements, become only of historic interest. Appended are a few notes on the conditions as then recorded in our columns.

At one hospital "with rather better than 100 beds, we found seven nurses on night duty, not one of whom had yet had a twelvemonth's experience of her work. They were all probationers, and most of them very young. There was not a single fully trained nurse on duty. . . . There is no regular system here for the night supervision of the nurses."

At another hospital the commissioner reports "a state of things which, to our mind, comes very near perfection. The staff consists of 43 nurses and 9 sisters. To every 35 patients (the number contained in a group of two wards) are allotted one sister, four nurses, and one probationer. The four nurses take it in turns to go on night duty—two

on and two off. . . . There is a regular night superintendent who comes on duty every evening at nine o'clock, and who is expected, under ordinary circumstances, to visit each ward in the hospital three times every night. . . . The sisters sleep in small rooms adjoining the wards, and, if an emergency arises, the nurse can call the sister, who takes charge of the case while she (the nurse) goes to fetch the medical officer."

At an infirmary "there were two nurses on night duty, each of whom, with no assistance of any kind, had charge of upwards of 200 patients!"

At another hospital "there are about 200 beds. The nursing staff consists of the matron, six sisters, and sixteen nurses. . . . There are seven night nurses, so that each nurse has the charge, on an average, of 33 patients, but for cases requiring extra attention special nurses are provided. The night nurses come on duty at 10 P.M. and remain on duty till 2 the next afternoon. . . . There is no superintendent of night nursing."

Elsewhere, "the hospital contains 150 beds, and the nursing staff consists of a sister superior, who has entire control, and is assisted by five sisters and 23 nurses and probationers. At the time of our visit there were 11 nurses on night duty. The nurses are by turns on day and night duty, taking a month at each. The night nurses are on duty from 9 P.M. to 9 A.M., and before going into their wards are regaled at 8 P.M. with a substantial meat supper, with tea or beer."

1890.

In 1890 THE LANCET Sanitary Commission made a report on the duties, pay, diet, and recreation of hospital nurses, as deduced from their own testimony. Of the information elicited, mostly from private inquiry, we select the following notes:—

"One of the commonest subjects of remark on the part of my correspondents is the food with which they are supplied. The cooking especially seems often to be faulty. Even when neither quantity nor quality is open to reproach, nurses complain of want of variety in food, and of the absence of fruit even in its season. One writes: 'At times the cooking has been very bad, quite spoiling and wasting good food.' Another says: 'A little more attention to the cooking and serving of food would render it much more appetising without additional expense. The monotony of the diet, and not the quality, is distasteful to a tired nurse' . . . This fault, though undoubtedly existing in some institutions, is as certainly avoided in others. Thus, from another hospital the testimony is: 'The food is good, abundant, and well cooked.'

"But what strikes me as being the most urgent demand is for a shortening of the hours of unrelieved work. . . . I will give the direct testimony of two of my correspondents on this point. The first writes: 'In my opinion the chief evil of the present system of nursing is the long hours the nurses are compelled to be on their feet, and there will be no remedy for that till the day is divided into three parts of eight hours, with three relays of nurses. The night nurses are especially hard worked, for they are on duty 12 hours, and in the medical wards often have not the chance of sitting down for even half an hour; then, after a hard night, have beds to make, washing of patients, dusting, and breakfast to prepare and to give each patient.' Another lady writes: '. . . I have now worked in a hospital for over a year, and my experience is that the whole cry of nurses off duty is "Oh! I am so tired." Should this be? Should a nurse off duty feel so worn out as she does? I quite think that the eight-hour system should be introduced in hospital. Why should not some little bit of the charity which is so freely given to the patients be extended to the nurses?' . . . One of my correspondents says, 'Recreation time is most often spent in resting. Very energetic nurses spend it in studying. I find nothing but the animal instincts for food and rest are left me in my recreation times. I am too tired for any mental exertion' . . . . By a comparison of the papers in my possession I gather that the one holiday of the nurse's long year averages two weeks for a probationer, three for a staff nurse, and four for a sister. A probationer in one hospital where the leave of absence is only ten days writes pathetically: 'The committee will not hear of our having a longer one. When one spends two days in the train, as some of us have to, it leaves us eight days, and to spend about £3 on it seems waste.'

"A rule obtains in some institutions of imposing household drudgery upon nurses. It surely is a very bad economy that employs a valuable expert as a mere housemaid. Why must these ladies be asked to expend their last bit of energy to 'sweep floors, scrub lockers and locker boards, clean brasses, and even keep lavatories in order, to clean lamp globes, and polish head boards?'"

1906–1910.

Early in this century allusions to the nursing profession in our columns are largely concerned with the development of district nursing and the conditions of nursing abroad. Two paragraphs from THE LANCET, 1906, ii., 175, and from 1910, ii., 1456, show that the diet offered and the hours of work exacted were causing public concern.

"*Feeding of Nurses.*—Under the auspices of the National Food Reform Association a conference of hospital matrons was held in Caxton Hall, London, on Nov. 5th to discuss the question of nurses' food in hospitals and similar institutions. . . . The general complaint, as expressed by many representatives, seemed to be the monotony of hospital fare, and many suggestions were made as to the practicability of altering this by adopting some of the French *réchauffé* dishes, and the German methods of cooking vegetables. The chief difficulties apparently lay in the extra thought in planning which would be thrown upon the caterer and upon the intelligence of the cook. But all were agreed that if the result is to be greater vigour in mind and body in the nurses, who are, after all, responsible for carrying out the medical treatment of the patients, then it is certainly worth while attempting to overcome these difficulties. One speaker said she thought the food was not of so much importance as the time taken for meals. In many institutions the nurses have only half an hour for dinner, out of which at least five minutes is taken up in going to and from the wards and dining-room.

"*Nurses and the Public View of their Work.*— . . . The infirmary committee, in the course of a report to the board, called attention to the fact that the infirmary was understaffed, pointing out that a probationer nurse was often in charge of more than one ward—that is, of more than 50 patients. A member of the committee, in moving the adoption of the report, pointed out the severe strain upon the night staff of the hospital and stated that the night nurses had to go without their meals owing to the pressure of their duties. It was proposed that six additional nurses should be appointed, so as to have one on night duty for each ward, which would appear to be a reasonable demand, indeed, the least compatible with safety. Eventually, after some discussion, it was decided to appoint three additional nurses instead of six."

1923.

In 1923 a book appeared[1] which, whether or not the conclusions reached therein find acceptance, sets out the problems requiring solution in clear detail. The book embodies a report of a committee appointed by the Rockefeller Foundation to study "general nursing education with a view to developing a programme for further study and for recommendation of future procedure." The following is an extract from our summary[2] of that section of the work which deals with American

HOSPITAL TRAINING SCHOOLS.

"The development of the hospital training school for nurses constitutes a unique chapter in the history of education. In almost all fields of professional life education has begun on a basis of apprentice training. The first law schools and the first medical schools were the outgrowth of the lawyer's and the physician's office. In nearly all other fields than that of nursing, education has outgrown the apprentice stage and leadership has passed into the hands of independent institutions, organised and endowed for a specifically educational purpose. The training of nurses, on the other hand, is still in the main directed by organisations created and maintained for the care of disease rather than for professional education. The progress which has been accomplished under such anomalous

[1] Nursing and Nursing Education in the United States (Report of the Committee for the Study of Nursing Education). New York: The Macmillan Company. 1923. 15*s*.

[2] THE LANCET, 1923, ii., 1204.

conditions is such as to reflect high credit upon both hospital administrators and the leaders of the nursing profession. Yet the conflict of interests between a policy of hospital administration, which properly aims to care for the sick at a minimum cost, and a policy of nursing education which with equal propriety aims to concentrate a maximum of effective training into a minimum time, is a real and vital one. The fact that the nursing profession fails to attract students in the number, and of the quality desired, strongly suggests that there is some shortcoming in the established avenues of approach thereto. The hospitals themselves, depending as they do so largely upon student nurses for their routine operation, have found themselves seriously handicapped by the small number of well-educated applicants. Inspection of 23 training schools representative of the best current practice in nursing education revealed some interesting points. For example, in some cases theoretic instruction was at fault; in others, ward duties appeared to be largely dictated by the need for hospital service rather than by the educational requirements of the students. This was evidenced by the astonishing irregularity of the time spent on different services by individual students and by the marked deviation between the duties actually performed and those scheduled in the official programme of the course.

The supervision of work in the wards was in certain instances notably inadequate. In only a few brilliantly exceptional cases was the ward work purposefully correlated with theoretical instruction. The lack of an intelligently planned progressive training was obvious in a large number of the hospitals studied, first year students often being found in positions of responsibility for which they were wholly unprepared, while seniors in another ward were repeating an educationally idle and profitless routine. Most striking of all was the factor of time wasted in procedures essential to the conduct of the hospital but of no educational value to the student concerned. Hours and days spent in performing the work of a ward maid, in putting away linen, in sterilising apparatus, in mending rubber gloves, in running errands, long after any important technique involved had become second nature, accounted in one typical hospital operating under the eight-hour system, where this problem was specially studied, for a clear wastage of between one-fourth and one-fifth of the student's working day.

The total amount of time assigned to ward service under the conditions which obtain in many hospitals is, in itself, a fairly complete obstacle to educational achievement. The selected group of hospitals, in this respect above the general average, showed a median day of between 8 and 8·5 hours on ward duty alone, exclusive of all classroom instruction. Irregular, excessive, and unproductive night duty was the rule rather than the exception. Crowded and unattractive living conditions tend, in certain hospitals, to impair the morale of the student body, and an atmosphere of autocratic discipline frequently prevents the development of a psychological atmosphere favourable to effective coöperative effort. It is emphasised that such shortcomings as have been pointed out are not fairly chargeable to deliberate neglect on the hospital authorities or nursing superintendents. In so far as they exist, they are due to the inherent difficulty of adjusting the conflicting claims of hospital management and nursing education, under a system in which nursing education is provided with no independent financial endowments for its specific ends."

In the issue of THE LANCET which contained this summary appeared the following letter from "A Middle-class Patient," reflecting another side:—

"I have just recovered from a troublesome prolonged but not very dangerous illness in which I badly wanted someone to wash me, to bring me my food, to make my bed, and in fact to attend to my physical needs. My doctor wished me to engage a trained nurse, a demand with which I should have been only too happy to comply if it had been possible to provide the extra accommodation, household service, and the meals more elaborate than the usual family ones. I could not face the prospect of having a guest who was entitled to a higher standard of comfort than that of my very modest household. The situation is a familiar one for which I can see no solution. Maybe there is no solution."

1930.

The following are extracts from some of the anonymous letters we have received from nurses following the publication of Dr. E. Carling's letter on Oct. 11th:—

"Though there still exists a large body of good nurses doing magnificent work throughout the country, it would, however, be folly to close our eyes to the fact that our profession is faced with new and urgent problems which call for coöperative effort. We seem to be passing from an era of altruism to one of individualism, and if all the time devoted to condemning the times we live in was devoted to new methods of adapting old machinery to present conditions half our problems would have been solved. Few, except those who have tried it, can realise the sacrifice entailed in working in a small special hospital or sanatorium after the varied and active service experienced in a big training school. Provided one cares sufficiently for the sick, any form of nursing is entirely satisfying and compensates for the almost complete loss of the amenities of a normal social life which a nurse forfeits on entering the profession. But the altruists are passing away and the individualists ask more than nine or ten hours a day devoted to often monotonous service, a thousand restrictions of institutional life, and a salary of about £60 a year. I agree with your correspondent that nursing is a great work, and if that is true, it calls for the finest women, and we shall not get them until the value of their service is openly acknowledged by the medical profession and they are accorded the education, payment, and social status commensurate with the services that they are rendering. At present, I consider the public has a better nursing service than it deserves, but undoubtedly, the service would be improved if a minimum standard of education was demanded for all entrants to the profession and a larger number of fully qualified nurses employed for the actual nursing, instead of training as at present, a large body of probationers eminently unsuited for the great work of nursing. If they were justly remunerated and accorded the professional and social status rightly due to them the women for the vacancies in our hospitals would soon be found."

"The modern educated girl is going to be nobody's 'handmaiden,' and the medical profession having exploited the 'handmaiden' idea of the nursing profession the servile attitude of the nurse has resulted in a loss of social status, which the girl whose brothers are often doctors is not prepared to accept. Medical science would be practically wasted unless there was a profession such as ours prepared to assist in its application. What is that service worth to the medical profession and the community? It has never been properly acknowledged by the former or paid by the latter, and when it is the finest women in the country will fill its ranks. A conference representing the public, the medical profession, and the nursing profession might possibly result in a little more understanding of what we all expect of each other, provided we are all allowed and have the courage to say what we really do expect."

"If the big hospitals still find recruits, but the lesser ones advertise in vain, it seems that there is something wrong with the lesser ones. 'Training' should not be offered by institutions which are not equipped to bring trainees to the State examination standard. In recognised schools conditions of work, teaching, and living have much improved of recent years—the changes for good are being made gradually but continuously, and it seems safe to presume that this improvement will continue. Training schools and lesser hospitals, sanatoria, &c., must coöperate in making a nurse's life satisfying and interesting. Is

it fantastic to suppose that a system could be evolved whereby a large institution could undertake the nursing in small or special 'daughter' institutions? The matron, sisters, and junior grades would be recruited from the large institution (for varying but not too long periods of service in the daughter institution). This might be to everyone's benefit, and in a four years' training it should be possible to make satisfactory arrangements to ensure recognition by the General Nursing Council. In lesser or special Hospitals salaries of £60–70 p.a. (from which contributions to superannuation funds are often deducted) are frequently offered. (Compare the salaries of £40–50 offered in the same institutions to untrained or semi-trained workers.) The hospital or sanatorium may be miles in the country, when even the weekly day off may become an expensive or tedious necessity, whereas annual holidays may not exceed three weeks, but most of all the nurse may be regarded merely as a rather superior domestic servant, and not at all as an intelligent and trained woman able and willing to coöperate in the doctor's lines of treatment. Many hospitals which can offer no advantages of training should be able to attract and offer congenial work to older nurses, many of whom find it increasingly difficult to secure the nursing of acute cases."

The extracts given above, which range over a period of 60 years, indicate that the conditions of nursing service in hospitals have not changed as much or in the same directions as conditions of work in other communities.

To what extent this conservatism is a necessary corollary of lives spent in caring for the sick, and to what extent it is due to other causes, it will be the business of the Commission now appointed to investigate.

STUDIES ON THE ARNETH COUNT.

THE problem of the polymorph had exercised the minds of hæmatologists for many years before J. Arneth[1] in 1904 published his classification of this leucocyte and described its behaviour in infections. His clinical results have received ample confirmation, but no explanation of the marrow reaction nor of the many points in connexion with the nuclear changes in the neutrophil polymorph was attempted until Dr. Eric Ponder, now professor of physiology in New York University, initiated in Edinburgh a series of experimental studies on the Arneth count, which are published from time to time in the *Quarterly Journal of Experimental Physiology*. The early papers, of which the first appeared in 1926, dealt with the relations between phagocytosis and nuclear configuration, and between nuclear configuration and nuclear area, the steady state of the count, the effect of thyroidectomy and the effect of various drugs and extracts on the polynuclear count. Whilst working on the effects of thyroid extract in rabbits, Ponder elucidated the life-history of the polymorph in the blood stream. Other papers of the series by Ponder and his co-workers at the Edinburgh school of physiology included those on experimental tuberculosis in the rabbit, deflection of the count by X rays, the relation between diapedesis and nuclear configuration, the deflection of the count by ultra-violet rays, the relation of the Arneth count to the total polymorph count, and the deviation of the count by various autacoids and animal extracts.

The Count in Surgical Tuberculosis.

The June issue of the *Journal* contains a further series of papers, including one on the Arneth Count in Surgical Tuberculosis in the High Alps, by Walter P. Kennedy and K. Newstead Flint. The authors discuss the Arneth count in cases of joint and bone tuberculosis treated by natural heliotherapy at Leysin. In a previous paper Kennedy and Thompson have shown that ultra-violet rays stimulate the hæmopoietic tissues to pour young polymorphs into the blood stream. Five hundred cases of surgical tuberculosis were examined by one of the authors and a striking difference was observed in the appearance and demeanour of the patients as compared with similar cases treated in this country. The great majority were deeply bronze and, notwithstanding long periods of immobilisation, showed a general muscular development unusual even in healthy persons in Scotland. The end-results were as remarkable—repair of both structure and function being exceedingly good. Blood films were taken from 140 patients—every patient in certain wards—no attempt being made to select patients approaching a cure. Distribution curves of the weighted means of the polynuclear counts in normal persons and tuberculous patients were published by Cooke and Ponder,[2] and upon these frequency polygons a third, that of the Leysin cases, was superimposed. This polygon overlapped the other two and occupied an intermediate position. In other words the Arneth count shows a lesser left-handed deviation in Alpine patients than in patients in Britain. The most obvious explanation is to be found in the different environmental factors, the principal one being that of natural heliotherapy. The authors explain that the action of the sun cannot be merely a stimulation of hæmopoietic function, since that would cause either a more left-handed deviation of the count, or if the removal of polymorphs increased proportionately, a continuation of the status quo. The difference of the frequency polygons is so distinct that this cannot be the case, and the only simple explanation is that the average life of the polymorph is prolonged—i.e., that removal from the circulation is not so rapid. Possibly, too, the sun's action results in more viable leucocytes being formed which, although produced by the marrow under the unfavourable influence of tubercle toxin, compare favourably with those produced under a similar handicap but without the beneficial adjuvant of natural heliotheropy.. It may be that antibodies are formed more readily under Alpine conditions and that vitamin D plays a part in the interactions.

Tissue Surgery and the Arneth Count.

The effect of tissue injury on the Arneth count has been studied by Dr. M. Danzer. of Washington Square, College, New York University, who finds the Arneth count deflected to the left in a variety of conditions, by such substances as thyroxine, colchicine and nucleic acid, by exposure to X rays and ultra-violet light, burning of the skin, crushing of bones or deep parts, as well as in every variety of microbic infection. Rather than postulate that each of these conditions results in stimulation of the marrow in a specific manner peculiar to itself, the author has sought for a particular substance or group of substances produced under all the conditions mentioned and capable of stimulating the marrow, to the presence and action of which the deflection of the count might be ascribed. The injection of extracts of muscle, brain, liver, and testis caused, in five hours, a marked left-handed deflection comparable with the deflection following the injection of 1 mg. of nucleic acid. A striking result was obtained by the injection of washed hæmolysed red corpuscles taken from and injected subcutaneously or intravenously into the same rabbit. In five hours the total leucocytes were double the previous numbers and the polynuclear count more

[1] Deut. med. Woch., 1904, xxx., 54.

[2] Cooke, W. E., and Ponder, E.: The Polynuclear Count, London, 1927, p. 69.

markedly deflected than with any other substance. Deproteinised extracts produced no deflection of the count. It is a reasonable assumption that the leucopoietic stimuli in these cases are proteins or substances allied to proteins. If they are proteins it is quite possible that they require to be broken down or otherwise transformed in the body before they can produce their effect because the deflection of the count by these tissue extracts is more slowly produced than by nucleic acid or thyroid extract. Except for the delay of three hours, the results are, however, exactly similar. The effect of destruction of tissues in vivo was next studied. Most anæsthetics—chloroform, ether, and chloralose—deflect the count, but it was found that ethyl urethane had no effect on it in rabbits. Under this anæsthetic muscle was destroyed by crushing, bones were fractured, and extensive superficial burns produced. The polynuclear count was deflected in exactly the same manner as in the former experiments. The author suggests that the continual and normal breakdown of tissue in the body is sufficient to provide a stimulus for the continual and normal output of polymorphs by the marrow.

Irradiated Ergosterol and the Count.

In the last paper of the series, in which Dr. D. R. Climenko reports on the deflection of the count by irradiated ergosterol, the experiments of Kennedy and Thompson are repeated, and the effects of injection of irradiated ergosterol in maize oil, separately and in conjunction with ultra-violet light, are studied in relation to the Arneth count and the calcium content of the blood. The result of ten minutes' exposure to the mercury-vapour lamp was the deflection of the count in the manner described by Kennedy and Thompson plus an appreciable but temporary increase in the blood calcium. The increase in the calcium content was not of the same order as that produced by large doses of irradiated ergosterol, but the deflection of the count was closely comparable in both series of experiments. The combination of irradiated ergosterol and direct radiation produced an additive effect on the blood calcium, an increase from 11·2 mg. to 17·4 mg. in 24 hours being noted. In the controls no deflection of the count nor alteration in the blood calcium level was produced either by filtered ultra-violet light or by non-irradiated ergosterol. These studies on the Arneth count have elucidated many points in connexion with the nucleus of the polymorph and led to a better understanding of the nature of the marrow reaction. The importance to practical medicine is apparent and illustrates once again the advantages of coöperation between physiologists and clinicians.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

JUVENILE EMPLOYMENT.

AFTER a long experimental period of juvenile advisory committees, the Scottish Education Department have issued a model constitution for such committees: they should have a chairman appointed directly by the Ministry, four representatives of the local education authority (or authorities) concerned, four teachers nominated by the Educational Institute for Scotland (representative of primary, advanced division, and secondary schools), six employers' representatives, six workpeople's representatives, and four other persons interested in questions relating to the employment and welfare of boys and girls. This constitution is variable according to local necessity. The committee's duties will be: (1) the advising of boys and girls between school-leaving age and the age of 18 on the selection of a suitable career; (2) rendering of assistance to boys and girls in obtaining employment; (3) the supervision of the boys or girls during the early stages of their industrial life as may be found necessary. The school-leaving cards must contain: a statement of the educational standard attained by the child, an expression of opinion by the head or other teacher on the child's aptitude for the work desired, and any material particulars of the child's medical history. Need for after-care or industrial supervision should be indicated by the head teacher, and reports should be furnished on all children about to leave school.

It is expected that this will result in a closer coöperation of the labour authorities and the education authorities. Conferences in schools are suggested.

THE PROGENY TEST.

Mr. A. D. Buchanan Smith, of the Animal Breeding Research Department of the University of Edinburgh, made some important points in a recent lecture on the progeny test. Now that milk is growing in use as a food, quantity becomes very important, and, in selecting good milkers, breeders must take account of the father as well as of the mother of his cows. Mr. Smith said that of the bulls used in the pedigree dairy herds of this country 85 per cent. were sent off to the butcher before their daughters came into milk. The only way that the value of a dairy cow could be estimated was by measuring the milk she produced, and until the daughters were in milk it was next to impossible to get any idea of the value of the bull they were using. This value was proved when the yields of the daughter of a bull were better than the yields of the dams of the daughters, allowing for the fact that a heifer's yield was only four-fifths of her mature yield.

RADIOLOGY AT GLASGOW.

The formal opening of the new radiological department at the Western Infirmary is an event of major importance to the Glasgow medical school. The Infirmary was one of the first institutions to make use of X rays for diagnostic purposes, and its work in ten years has increased from 6000 to over 19,000 exposures a year. The situation of the Infirmary is one of the finest in Scotland, and the new department benefits by this fact. It forms an important unit in the hospital's organisation as the national radium centre. Dr. C. O. Hawthorne, who gave an address at the opening ceremony, spoke of certain tendencies in present-day medicine. Bedside studies were being reinforced by laboratory investigations, but it was on these studies that the great bodies of fact and doctrine rested. The notion that a patient's ills and requirements could be determined by some form of scientific test made in a laboratory by an observer who had never seen the sick man was only less fantastic than the claim that a film of blood on a blotting paper could reveal the pathological disturbances of which the patient was the victim. He then sketched the enormous improvement in methods and results from the steady development in the delicacy of apparatus. On the uses of radium he spoke with scientific moderation. Whatever might be its therapeutical possibilities, radium was, he said, an element with dangerous qualities, and was not safe out of the hands of a specially trained and highly competent staff. Its value was undoubted, but like all single

and powerful remedies it had excited hopes out of all proportion to its present importance.

DR. WOODBURN MORISON'S APPOINTMENT.

There is widespread regret that Dr. Woodburn Morison should have left Edinburgh to accept a chair of radiology in London, for it is felt that the new department at the Royal Infirmary had grown up with him from the first elements of the building plan. Equipped on a scale hitherto unknown to Scottish institutions, he knew it with the intimacy that is possible only to the designer and the executive architect. Full details were given in this column when the Duke of York opened the department four years ago, and these need not be repeated. It was at a cost of £52,000 that Edinburgh redeemed the reproach that an X ray installation must be sought in a noisome cellar. I recently took an English friend over every section of the department, and he was immensely struck with the many signs of the directive intelligence that a department with so many dangerous machines demands. Prof. Morison seemed to keep alive in his brain every piece of apparatus under his care, and the enthusiasm of his officers reflected his own. All his friends in Edinburgh wish him success in his new appointment.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

GALWAY BOARD OF HEALTH.

LAST week Mr. A. P. Delaney, one of the inspectors of the Department of Local Government and Public Health, held an inquiry into the manner in which the County Galway Board of Health performed its duties. The immediate cause of the inquiry was the refusal of the Board of Health to appoint an assistant to the county medical officer of health. The former county tuberculosis officer had recently been appointed county medical officer of health, and the Board had failed to provide him with an assistant. At the inquiry the secretary of the Board of Health stated that the only reason for the refusal of the Board was the desire to save the county from being saddled with expenses it could ill afford. The proposed plan was only the beginning of a scheme which would land the county in bankruptcy. He read an opinion given by the medical staff of Galway Central Hospital which expressed disapproval of the proposed scheme. There were 367 schools in the county, and to carry out a scheme of school inspection and treatment would cost over £10,000 a year. As an alternative poor children should be treated by the dispensary doctors, and the children of the rich could have treatment provided at the expense of the parents. As regards tuberculosis, the county medical officer should attend the various tuberculosis dispensaries throughout the country as part of his duties, and the staff of the Central Hospital would be responsible for the care of the County Sanatorium; or, as an alternative, the care of the tuberculosis dispensaries should be entrusted to the dispensary doctors. Dr. B. O'Beirne, county medical officer of health, stated that it was absolutely necessary that an assistant should be appointed. Since his appointment as county medical officer of health he had been unable to attend at the six tuberculosis dispensaries scattered through the county, and they had been neglected. Prof. T. Walsh, a former chairman of the Board of Health, gave evidence in support of the opinion expressed by himself and his colleagues at the Galway Central Hospital. He said that the existing machinery was adequate, and it was only a question of coördinating it. To inspect schools was useless unless treatment was provided for all defective scholars. An effective scheme would require the services of four or five additional doctors, and he did not think that this expense was justified. At the moment the great difficulty in County Galway was poverty. The inquiry concluded after further evidence on behalf of the Board of Health.

ULSTER MEDICAL SOCIETY.

At the second meeting of the session on Oct. 30th, with Mr. Henry Hanna, the President, in the chair, Dr. R. H. Hunter made an appeal for the study of the history of medicine, and suggested that the society should try to foster an interest in this subject by opening each meeting with a short paper on some phase of this subject. He then read such a paper, on the Treatment of Wounds in the Dark Ages. At first, he said, suppuration was induced in all wounds to rid the body of evil humours, and the wound was kept open by tubes and setons. Theodoric, in 1266, tried to introduce the washing of wounds with white wine and dressing with lint soaked in wine, and so to obtain healing "by adhesions." This method never became popular, and the older method remained popular until the sixteenth century, when the margins of the wound were drawn together and kept in place with a thick paste. Until Lister introduced his antiseptic technique mediæval methods were not finally abandoned. Mr. P. T. Crymble then read a paper on the results of 36 consecutive cases of gastric ulcer treated by gastrectomy. There were three operation deaths and one subsequent death. The follow-up showed the following results: very good, 21; good, 4; fair, 2; no reply, 5. In three cases the ulcer developed in the presence of a gastro-enterostomy. Mr. Crymble brought forward a number of arguments in favour of gastrectomy for gastric ulcer: (1) it reduces acidity; (2) the ulcer-bearing area is removed; (3) it offers the safest and easiest means of dealing directly with an adherent ulcer; (4) not only is the palpable ulcer removed, but the excised portion is often found to be the seat of gastritis or a second ulcer; (5) the danger of leaving a cancerous ulcer is eliminated; (6) the danger of jejunal ulcer is almost completely eliminated; (7) the ultimate results are very good, and the patient with a small stomach can lead an ordinary life. In 33 of the cases a retrocolic end-to-side gastro-jejunostomy was done, and in three an antecolic end-to-side gastro-jejunostomy.

THE LADY CHICHESTER HOSPITAL.—This institution for women and children at Hove is this year keeping the twenty-fifth anniversary of its establishment. It was the first hospital in England for patients seeking treatment on a purely voluntary basis for early nervous and borderland maladies. Patients, who are admitted simply upon a medical recommendation, pay according to their means up to a maximum of £3 10s. per week, but no one is refused admission on the ground of inability to pay. There are 53 beds; the average annual admission-rate is 175; and of 100 consecutive cases 73 were discharged fit to return to their ordinary life. A new annexe has been provided for the accommodation of patients of both sexes in connexion with an out-patient department for early nervous and borderland cases at the Sussex County Hospital, Brighton, and an appeal is being made for the means to pay off debt and defray the cost of the new accommodation.

PUBLIC HEALTH SERVICES

MENTAL HOSPITAL REPORTS.

The DEVON MENTAL HOSPITAL publishes an illustrated report with photographs of some of the industries which keep the patients employed. There were 1311 patients on the register at the end of last year, and the shortage of accommodation on the female side became acute. The recovery-rate was 43·04 per cent., the highest figure for 30 years. The death-rate was 8 per cent.—a slight increase accounted for by 10 deaths from malignant disease and 6 from epilepsy. Post-mortem examinations were made on 65·3 per cent. of the cases. There was no typhoid or paratyphoid and these diseases seem to have been eradicated; routine inoculations have, therefore, been discontinued. There were four cases of dysentery, and 12 patients suffering from general paralysis were treated with malaria. Four of them have been discharged and three show improvement. In three cases an unsuccessful attempt was made to induce malaria with sporozoites from the salivary glands of the mosquito, sent in blood serum through the post. Ten of the cases received tryparsamide injections in addition to malaria inoculations. The results were encouraging. The total of paralytic patients treated by malaria is now 40, and the medical superintendent gives an account of one successful juvenile case. Three cases of piles and one of varicose veins were treated by injection. The visiting surgeon examined 68 patients and performed 30 major operations. The visiting ophthalmic surgeon examined 83 cases, and the dental surgeon saw 822 patients at his fortnightly visits. Ultra-violet light treatment was given to 36 patients with benefit. It does not, however, seem to suit epileptics or agitated melancholics. The consulting radiologist made 56 examinations. The laboratory was busy with the usual investigations, and the out-patient clinic at Exeter increased its annual attendance from 63 to 130. To give adequate service both to new patients and after-care cases the fortnightly sessions will have to be changed to weekly ones. A water-aerating plant was purchased in June, and in six months had effected a saving of £8 on the purchase of syphons of soda and lemonade. An average of 139 patients daily had parole within the estate, while 50 more were allowed outside and 25 were taken out by friends for short periods. The open-door system and club-ward system are also freely adopted. Practically all the printing required in the hospital is done in the shop, and other patients are employed on bookbinding, weaving, net-, mat-, brush-, basket-, and rug-making, knitting, and raffia work. Nurses are now required to sign an agreement to take a three years' course of systematic instruction which qualifies them to sit for the examinations of the General Nursing Council. One sister attained her double qualification last year, three nurses and one attendant passed the final G.N.C. examination, and ten nurses and two attendants the final R.M.P.A. examination. There is urgent need for better accommodation for the nursing staff.

The report of the Asylums' Committee for the CITY OF BIRMINGHAM states that there were 2730 patients under their care at Winson Green on March 31st, 1930. The recovery-rate for the preceding 12 months was 45 per cent.; 48 of the 77 patients discharged recovered were allowed out on a month's preliminary trial, 32 of them with financial help. The death-rate was 7·35 per cent., and post-mortem examinations were made in 93 per cent. of the deaths. The general health was satisfactory, except for an influenza epidemic in the spring. Two male patients and one female were suffering from tuberculosis at the end of the year, and one attendant was attacked with diphtheria; otherwise there was no infectious disease. The visiting ear, nose and throat specialist examined 162 patients, and found chronic septic conditions in the majority. The visiting gynæcologist examined 92 women, many of whom needed treatment for inflammatory conditions or displacements. The visiting dentist examined all new admissions. The results of treating chronic focal sepsis have continued satisfactory. Protein therapy by means of T.A.B. vaccine was given to 52 patients, and nine were treated by malaria for general paralysis. Artificial sunlight was used during the winter. Useful employment was provided for 65·5 per cent. of the patients, and parole was freely granted; 60 per cent. of the staff hold the R.M.P.A. certificate.

At RUBERY HILL AND HOLLYMOOR there were 1373 patients on Dec. 31st, 1929. The recovery-rate was 40·7 per cent., and the death-rate 7·73 per cent. Autopsies were carried out in 49·2 per cent. of the deaths. Influenza took a toll inside as well as outside the hospital during the early part of the year, and a large number of patients suffered from the epidemic. Only two patients are known to be suffering from tuberculosis, and intestinal diseases have been entirely absent. Routine examinations of new admissions often reveal the fact that the patients have suffered from intestinal infection, and this factor is believed to reduce the resistance to septic infections. A small epidemic of diphtheria occurred in the summer, and was soon traced to a carrier. The dairy herd has twice been tested for tuberculosis with no positive results. During the year five attendants and 19 nurses passed their final R.M.P.A. examination, bringing the total certificated to 86 attendants and 66 nurses.

The MONYHULL COLONY for feeble-minded and epileptic children had 1206 cases in residence on March 31st last. There was a death-rate of 12·7 per 1000, about half the deaths being due to epilepsy; 12 cases of tuberculosis have been under treatment and, apart from mild influenza, there has been little infectious disease. Leave of absence was granted to 1367 patients during the year, a larger number than formerly, and on the whole the leave regulations were fairly well observed. As in all institutions of this kind, there is acute pressure of accommodation, which is bound to interfere to some extent with the classification of patients. The dental condition of the colonists is now very satisfactory, and the work of the dental surgeon is showing its good effects in better health generally. All the workshops were busily occupied during the year, and the industries were developed as far as possible. On an average 394 men and 460 women were regularly employed, and over 36,000 articles were made and 65,000 repaired. Pathological investigations are made for the colony at the Hollymoor laboratory. During the year eight nurses passed the final examination of the R.M.P.A., so that there are now 32 nurses and 35 attendants certificated or State registered.

At the RESIDENTIAL SCHOOL there were 329 patients on March 31st. The average age of the children on admission is between 5 and 10. It is much better that they should come early, but there has been a certain amount of congestion in the junior classes. The children are under daily medical observations in the home, and a consulting staff is available when required. The dental surgeon examined all new cases, and makes periodical inspections. Two nurses attained their R.M.P.A. certificate during the year, bringing the total to 11 certificated or registered.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED NOV. 1ST, 1930.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 87 (last week 86); scarlet fever, 2301; diphtheria, 1520; enteric fever, 42; pneumonia, 698; puerperal

fever, 48; puerperal pyrexia, 102; cerebro-spinal fever, 11; acute poliomyelitis, 9; acute polio-encephalitis, 3; encephalitis lethargica, 12; dysentery, 5; ophthalmia neonatorum, 106. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Nov. 4th–5th was as follows:—Small-pox, 183 under treatment, 3 under observation (last week 172 together); scarlet fever, 1803; diphtheria, 2198; enteric fever, 17; measles, 90; whooping-cough, 105; puerperal fever, 22 (plus 10 babies); encephalitis lethargica, 121; "other diseases," 43. At St. Margaret's Hospital there were 11 babies (plus 4 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was 1 death from small-pox, 3 (0) from enteric fever, 15 (1) from measles, 6 (1) from scarlet fever, 10 (1) from whooping-cough, 32 (2) from diphtheria, 62 (20) from diarrhœa and enteritis under two years, and 41 (9) from influenza. The figures in parentheses are those for London itself.

The fatal case of small-pox was reported from Stepney Met. Boro. Bristol and Hull each reported 3 deaths from measles; Worcester, Birmingham, and York each 2. Four fatal cases of scarlet fever were reported from Leeds. Liverpool reported 4 deaths from diphtheria, Manchester and Dewsbury each 3. Diarrhœa accounted for 6 deaths at Liverpool, 3 each at Birmingham and Nottingham. Birmingham also reported 7 deaths from influenza.

The number of stillbirths notified during the week was 261, corresponding to a rate of 40 per 1000 births, including 47 in London.

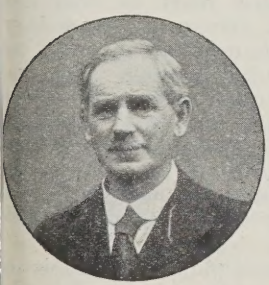
DEATH FROM SMALL-POX.

The fatal case of small-pox reported in the metropolitan borough of Stepney was that of a dock labourer, aged 58 years, who was admitted to St. George-in-the-East Hospital on July 8th, and removed on Aug. 4th to Joyce Green Hospital, where he died on Oct. 31st. Dr. J. M. Browne, medical officer of health for Stepney, informs us that the cause of death was certified as (1*a*) myocarditis; (2) small-pox. The man had been vaccinated in infancy. There was no autopsy.

OBITUARY

ROBERT LINDSAY, L.D.S. Edin.

Mr. Robert Lindsay, who died on Nov. 4th, had been the dental secretary of the British Dental Association for 11 years, and his loss both to the Association and to the dental profession as a whole is a severe one. Before taking up this appointment he was in practice in Edinburgh, where he had held a teaching post in connexion with the Edinburgh Dental School. As the first full-time dental secretary of the association he found scope for his powers of organisation, his great energy, and his detailed knowledge of every phase of dental work.



MR. ROBERT LINDSAY.

The passage of the Dentists Act, 1921, created many difficulties, for it legalised the position of the large number of unqualified practitioners. The Dentists Register established by the newly formed Dental Board included both qualified and unqualified dentists, and the latter were in a large majority. This Act, though plainly inevitable, was bitterly resented by many qualified dentists, and a split was threatened in the ranks of the British Dental Association. Lindsay performed valuable work in averting such dissension, and the fact that the Association surmounted this difficulty and went on increasing in strength was largely due to his shrewd practical sense. The institution of panel dentistry as an additional benefit under the National Health Insurance Act was another change which has been of great value to the community as a whole, but has created delicate problems calling for tact and persuasiveness. It was necessary to establish a scale of fees acceptable both to the insurance societies and the dental profession. The difficulties of negotiation were enhanced by the fact that the societies had to deal both with the British Dental Association, representing the qualified dentists, and with the various bodies to which the unqualified but registered practitioners belonged. In the end these difficulties were surmounted, though not easily. "It would be hard to speak too highly of the work which Lindsay carried out in this connexion," writes a colleague. "Much of it was done behind the scenes, and the full extent of his labours is known only to a few. But the dental profession has cause to be deeply grateful to him. He was an excellent speaker and his retentive memory enabled him to deal with a complicated mass of details without a note. Though a complete master of the innumerable details constantly arising in his work, yet he had a broad outlook and always took a statesmanlike view of any problem under discussion. Personally, he was a man of simple tastes. Austerity and kindness were happily blended. His criticisms could sometimes be pungent but were always devoid of malice. He served the British Dental Association with single-minded loyalty, and by all its members and by many others outside its ranks his death will be deeply mourned."

CHRISTIAAN EIJKMAN, M.D.

Prof. Eijkman, who has died at Utrecht, laid many of the foundations of our present knowledge of deficiency diseases, and shared with Sir Gowland Hopkins the Nobel Prize for Medicine in 1929.

The son of a schoolmaster, Eijkman was born in 1858, at Nijberk, a small town on the Zuyder Zee. He began his studies in 1875 at the University of Amsterdam, and was for some years assistant to the professor of physiology there. In 1883 he joined the colonial army in the Dutch East Indies, but he was invalided home two years later and resumed his laboratory work, this time as a bacteriologist. In 1886 he returned to the Dutch East Indies as a member of a study commission on beri-beri, which at that time was raging in the Dutch colonial army and navy. The ætiology of this disease was then obscure and as the medical world had been hypnotised by Pasteur and his followers into thinking of disease in terms of bacteria, it is not surprising that this commission came to the conclusion that beri-beri must be an infectious disease. While his colleagues on the commission returned home, Eijkman remained in Batavia as director of the new laboratory for bacteriology and pathology and took charge also of the medical school for native doctors.

Eijkman's original research in connexion with beri-beri began in a curiously accidental way. He wished to carry out certain investigations on fowls, and in order to economise on their food he fed them

on scraps from the wards of the military hospital to which he was attached. On these scraps, which consisted chiefly of cooked, polished rice, the fowls developed paralyses, whose nature was at first obscure. A clue thereto was unintentionally given by a newly appointed director of the hospital, who refused to let Eijkman feed his fowls any longer on scraps from the wards. Henceforward they were fed on gaba (rice still in the husks) and on this diet they recovered. Eijkman's identification of this polyneuritis gallinarum with the beri-beri of human beings was at first generally scorned or ignored, but about 1896, after much painstaking research in coöperation with Dr. Grijns and Dr. Voderman, he came to the firm conclusion that a diet of over-milled rice was the chief cause both of the polyneuritis of fowls and of the beri-beri of human beings. The term "partial hunger" was given to this condition.

Other investigations into morbid conditions of the blood in the tropics led Eijkman, in the early 'nineties, to reject some of the prevalent conceptions of the nature of tropical anæmia, which at that time was held to be a nosological unit. He also challenged the assumption that human metabolism varied greatly with the different climates. He showed that the metabolism of the human body is practically identical in the tropics and in cold climates; and he came to the conclusion that acclimatisation does not mean a fundamental change in metabolism, but immunisation to a new group of infectious diseases with which the newcomer to the tropics had not previously been in contact. Among the more important research which he carried out in later years was his study of fermentation tests and the demonstration of the presence of *Bacillus coli* in water (Eijkman's test). After being invalided home in 1896 Eijkman was appointed professor of hygiene at the University of Utrecht, and he held this post till 1928, when he was in his seventieth year.

CONSTANTIN von MONAKOW.

THE death of Prof. von Monakow at Zürich at the age of 77 removes one of the founders of modern neurology. As a young asylum doctor he was attracted to the organic substratum of sensation and movement at a time when little was known even of the tracts in the brain-stem. His first work was, therefore, directed to a study of the relations of the thalamus with the higher and lower centres. For this purpose he devised the method, which in his hands gave fruitful results, of cutting tracts or removing nuclei in newly born animals and examining the brain after some months of growth to find what parts of it had failed to develop. In this way he was able to demonstrate the relationship of the various nuclei of the thalamus to different parts of the cortex, of the mesial fillet to the nuclei of the posterior columns, of the striæ acusticæ to the lateral fillet, and of the red nucleus to the rubrospinal tract. He was also the first to demonstrate clearly the relationship of the optic tract to the external geniculate body.

These early researches, while bringing him fame, set Monakow in opposition to much of the teaching of the day. From anatomical study of the brain-stem he proceeded to a study of localisation in the cerebral cortex. In this work he had to rely largely on human clinico-pathological material from which it was more difficult to reach clear-cut conclusions, but the philosophic bent of his mind made him dissent from the current tendency towards localising each function of the cortex in a circumscribed area. For him there were, indeed, areas in which the combined action of lower centres was integrated, but his knowledge of comparative anatomy and physiology enabled him to see the chronological basis of this integration. With the development of the fore-brain more and more powers of integration were relegated to it, and in lesions or disease of the cortex those which had come latest were usually the first to be lost. This chronological basis was assumed by him not only in his work on aphasia but in relation to his much discussed theory of diaschisis. This theory was an attempt to explain the widespread and severe initial loss of function which follows sudden damage to the nervous system. According to Monakow's theory the damage to the centre split or tore apart the constituent elements of a function, destroying their integration. This disturbance at first abolished the functions of the individual elements, and these were later re-established according to the chronological basis already mentioned. This theory formed the basis of an attack on the theories of cerebral localisation current at the time which was launched in his book "Die Lokalisation im Grosshirn," published in 1914.

Monakow's theories of the function of the brain tended towards a humoral basis. This was already noticeable in his theory of diaschisis, according to which the nutrition rather than the function of the lower centres was disturbed by a lesion of a higher centre. Later, he became impressed by the influence of the ductless glands on the activity of nerve-cells, and he suggested the theory that mental diseases might be due to degenerations of the choroid plexus which allowed metabolic poisons to pass through it into the cerebro-spinal fluid and thence into the brain substance. During his later years he was also engaged in formulating a system of psychology, individual and based on his own earlier work, but influenced to some extent by Bergson. This was embodied along with much other material in a book published in 1928, in association with Mourgue, "Introduction biologique à l'étude de la neurologie et de psychopathologie," a book which, in the phrase of a reviewer, "orients the neurologist and psychopathologist and provokes and compels thought."

An original thinker whose philosophic habit of thought was restrained by an untiring zeal in the quest of facts, Monakow was a constant stimulus to his students and associates. He was active in forming first a Zürich neurological and psychiatric society, and later a Swiss neurological association; in 1917, in spite of the difficulties of publication due to the war, he inaugurated the *Archives suisses de neurologie et psychiatrie* which he edited up to his death. Our memory of him is of a tall, big-hearted, kindly man, remarkably modest, in spite of his commanding position in Swiss neurology, and very appreciative of the recognition which he received from British neurologists.

WEST BROMWICH HOSPITAL.—The board of management have declined to establish a contributory fund on the ground that it desires to maintain the entirely voluntary nature of the hospital. At the annual meeting it was stated, on behalf of the medical staff, that if a contributory scheme were started they would have to ask for payment. The number of in-patients treated last year was 1373; there were 17,932 out-patients. The in-patients stayed on the average 27·10 days; the average cost of each was £8 19*s.* 2*d.*, and the average cost per occupied bed £104 15*s.* 1*d.*, as compared with £113 0*s.* 6*d.* in the preceding year.

CORRESPONDENCE

ELECTRO-SURGERY.

To the Editor of THE LANCET.

SIR,—Your leading article of Nov. 1st might give the impression that electro-surgery has made little progress in London. As a matter of fact in my own hospital practice, in that of my colleague at the Middlesex Hospital, Mr. Gordon Taylor, and doubtless at other hospitals, the electric needle has definitely replaced the scalpel for many categories of operation. For breast and mouth surgery it is at present indispensable, and you allowed me the privilege of advocating diathermy for carcinoma of the breast in your columns as far back as May, 1927. Mr. Anderson, who has done such good work in Dundee in pioneering the method, appears not to have used the diathermy needle for abdominal surgery. It will be found, in my opinion, a most satisfactory instrument for gastrectomy, lessening hæmorrhage, both operative and post-operative, from the divided mucous membrane and—what is much more important—reducing shock to a minimum. I feel bound to record, in regard to gastrectomy, my dissent from Lord Moynihan's recent statement that the technique of the operation cannot be improved upon. The use of diathermy alters the whole aspect of the post-operative period and does away with the need for special measures, such as transfusion and intravenous saline, which were required in its first days.

It would be regrettable, and very unfair to our own manufacturers, if the impression got abroad that good surgical work can be done only with a very expensive imported machine. Where direct current is available the old small Schall machine, the cost of which is very moderate, does excellent work. There are several quite efficient and not expensive alternating current machines both of English and continental make. Hospitals installing the method—and every hospital must shortly do so—should choose their machine by actual trial of competing machines in the operating theatre, should avoid the temptations of mere costliness and unnecessary ultra-refinement, and should give the preference, efficiency being equal, to an English machine.

I am, Sir, yours faithfully,

W. SAMPSON HANDLEY.

Harley-street, W., Nov. 7th, 1930.

A MEDICAL SERVICE FOR THE NATION.

To the Editor of THE LANCET.

SIR,—I am afraid that in spite of Mr. Layton's trouble I remain unconvinced. I recognise that his contention that social service is valuable is a logical result of his belief that at birth all are equal. But this assertion does not become a fact by mere assertion. I would ask Mr. Layton if he considers that the farmer believes that at birth all calves are equal? Why does the farmer spend large sums in breeding stock from animals of proved superiority in milk yielding? I am told by those who have observed under the rather rare conditions in this country that there is considerable difference at the seventh day in the expression, movements, cry, and behaviour of the child of slum parentage and a child of the "quality," nursed side by side from birth under similar conditions. What about Galton's researches into the inheritance of genius? Surely Mendelian factors have some influence in human heredity. Admitted there are few data for the human race, but they have been shown to play a part in the blood groups.

The survival of the fittest still holds good for the human race, though civilisation has done a good deal to upset the balance, but in general terms the successful adaptation to life depends on a balanced moral, mental, and physical equipment. The successive waves of invasion into the aristocracy described by Disraeli depended on the efforts of the best equipped members of the lower castes who had inherited the most valuable genes from both parents. On investigation it would be found that the other members of those families remained at their original level.

The factor of chance cannot be disregarded and must bring about some exceptions to the general rule. But in contradistinction to Mr. Layton I think it must be agreed that some individuals inherit a better equipment than others and that the progress of the race depends on these more fortunate persons. They should not be denied the opportunity of helping their more unfortunate fellows, but on the other hand they should not be hampered or crippled by demands for a luxury social service. If everyone is reduced to a general dead level in the endeavour to eliminate class distinctions the progress of the race will be endangered. As Bicket says in Galsworthy's "White Monkey," life would be a frost if the world were reduced to the level of a pound a day. The better stock would be discouraged at the deprivation of opportunities for further progress, and the poorer stock would be deprived of all responsibility or any further incentive for improvement.

I am, Sir, yours faithfully,

Bristol, Nov. 8th, 1930. FRANK BODMAN.

MEDICAL EDUCATION.

To the Editor of THE LANCET.

SIR,—There can be little doubt that the arrangement of the medical curriculum is to those in whose hands it rests an unending source of difficulty. So much to be learnt and, relatively, so little time in which it is to be taught. The outcome of the labours of these persons in authority must, from the nature of things, be rather the result of the sifting of those opinions to which they have access than the conclusions derived from first-hand experience. From this it would reasonably appear that while the advice of those who teach is easily obtained and readily given the great mass of those who are taught remain inarticulate. The students, lacking authoritative representatives, are unable to give coherent expression to their views. Consequently, the balance of opinion available to those who arrange the curriculum is unevenly struck. The opinion of experience is, admittedly, more valuable than that of inexperience. The young, notoriously, do not know what is good for them. Yet the knowledge that the student possesses of his own capabilities, desires, and ambitions renders his opinion deserving of a certain consideration. You will, therefore, perhaps allow some of your valuable space for this comment upon existing conditions.

It is obvious that, as the scope of the medical curriculum widens, compensation must be found either in increased duration of studentship or in greater concentration of study within the allotted

time. As the period of training has already been lengthened to the limits of financial endurance, a process of intensified study is the only issue out of the difficulty. This correction for the inevitable increase in medical knowledge works itself out along the following lines. For five or six years lectures and demonstrations jostle one another in close competition, and the immediate study of the patient recedes further and further into the background. The student, in his endeavour to achieve examination success, resorts to the highly vicious process of cramming. As the capacity of the mind is limited, a fairly complete knowledge of a few subjects is replaced by a smattering of knowledge of several subjects. This is, in effect, a redistribution of the available mental energy as the number of subjects to be learnt, grows. But the increase of the number of subjects carries with it an additional evil. It results in the dissipation of interest. The student's mind becomes the repository of half-digested knowledge, for the complete digestion of which there no longer exists the intellectual appetite.

The position is a deadlock. However desirable it may be for the student to be conversant with, for example, anything more than the broadest outlines of psychological or preventive medicine, the fact remains that he is incapable of absorbing more than a certain amount of knowledge in a given time. And this amount is limited, in the main, by natural ability and interest. The present lack of time enjoyed by the student for the exploitation of those lines of interest awakened by his work, allied with the consciousness that he must be continually pressing on to some other part of the syllabus, is one of the most unfortunate results of the increasing curriculum.

The solution of these problems is difficult. It is hard to see how the syllabus can be cut down or the course of training lengthened. There does, however, seem to be one weakness in the system, the correction of which would possibly result in a saving of time, and, almost certainly, in a greater maintenance of interest. The marked segmentation of the medical training into the three examination stages has two undesirable sequelæ. First, until he commences clinical work, the student tends to forget to what end he is studying any particular subject. The danger of this is increased in virtue of the fact that he is taught by specialists at every stage. The biology course may be instanced as an example of this. Here the teachers are biologists interested in experimental biology rather than in medicine. Inevitably, the student's interest becomes misdirected. He becomes temporarily a biologist in embryo, rather than a doctor in embryo. What should be the motive medical idea is for the time being forgotten. And so on, throughout the whole of the early training, in the absence of any medical thought or atmosphere, the student loses sight of the fact that he is supposed to be building a firm basis on which to found his medical knowledge. Secondly, the system results in a certain unnecessary re-covering of old ground. Anatomy and surgical anatomy do not enjoy the economical relationship to one another that would seem justifiable and desirable; similarly, medicine and physiology, pathology and histology. In fact, so frequently has this failing been pointed out that its exemplification requires no further elaboration here.

The cure lies in the application in this sphere of the basic idea of Lord Moynihan's Toronto address. A closer coördination of the teaching of the various component parts of the medical curriculum is needed. This can only be achieved by the institution of a collateral system of studying the various subjects. Under such circumstances the student would not lose sight of his ultimate goal and would almost certainly find the work easier to learn. Collateral study would satisfy the student that he was, all the time, acquiring information that would be useful to him, and by so doing would keep alive his original enthusiasm. This enthusiasm dies because the contact with actual medicine, to which the student has so long looked forward, is made too late in the training. To study the preliminary subjects in terms of the desired knowledge would stimulate interest in both of them.

I am, Sir, yours faithfully,

London, W., Oct. 27th, 1930. DONALD BATEMAN.

INJECTION TREATMENT OF SIMPLE GANGLION.

To the Editor of THE LANCET.

SIR,—Mr. P. McEvedy, who described in your issue of Oct. 25th (p. 902) a method of treating simple ganglion by injection with sodium morrhuate, might be interested in the following case.

A healthy young man consulted me for a swelling of his left pinna which for all the world looked like a hæmatoma, but there was no history of even a slight injury and transillumination showed that the contents were not opaque. With a minute injection into the skin of sterinovo, I aspirated the cyst, withdrawing a yellow fluid, which was found to be sterile and contained a few red blood corpuscles, evidently serum. Three or four days later the swelling had reformed. This time I adopted the same procedure, only after aspiration I injected, through the same needle, 1 c.cm. of quinine urethane — just half the amount of the fluid aspirated. The condition was quite painless except for a little "tingling irritation" after two or three days, and in less than ten days the pinna was completely restored to its normal shape.

I am, Sir, yours faithfully,

WRIGHT LAMBERT, M.R.C.S., L.D.S.

Brentwood, Essex, Nov. 8th, 1930.

HÆMATOPOIETIC PROPERTIES OF DRIED MILK.

To the Editor of THE LANCET.

SIR,—I am grateful to Dr. Taylor for affording me this opportunity to make clear what might appear an omission. Dr. Helen McKay's exceedingly interesting paper described the administration of quantities of iron—up to nine grains or more per diem per infant—that amount to medicinal doses. My investigation was primarily concerned with a possible nutritional deficiency, and the means of remedying it.

Cow's milk contains little more than half the milk sugar of human milk. This deficiency is well recognised and is made good in infant feeding by the addition of sugar or by the use of a humanised food. The work I cited indicates that cow's milk is also deficient in iron. Many practitioners would, I think, wish to make good that deficiency also, since it only amounts to one-thirtieth grain per pint, though they might hesitate to give several grains of iron and ammonium citrate as a daily routine to an infant. My own experiments were solely intended to discover whether this could be achieved by drying the iron in with the milk.

The downward trend of the hæmoglobin content in the rats towards the end of the experiment is what is normally observed with increasing age. At the end of the experiment the animals were more than half-way

towards maturity. A similar fall is known to occur in human blood.

I am, Sir, yours faithfully,

A. L. BACHARACH.

Glaxo Research Laboratory, Osnaburgh-street, N.W., Nov. 10th, 1930.

IRRADIATION OF GERM-CELLS AND FŒTUS.

To the Editor of THE LANCET.

SIR,—In your leading article of Oct. 11th (p. 806) you have overlooked the work of Dr. Leopold Goldstein, of Philadelphia. Among those of Murphy, Archenheim, Stettner, Quin, Driessen, Lacassagne, and Seynsche his name seems to me worthy of mention. I append a list of his contributions to the literature of this subject.

I am, Sir, yours faithfully,

HYMAN I. GOLDSTEIN.

1. Radiogenic Microcephaly (19 recorded cases, ophthalmic defects). Arch. Neur. and Psych., July 1930, p. 102.
2. Micromelia in a Child Irradiated in Utero. Surg., Gynec., and Obstet., Jan., 1930, p. 79.
3. Amer. Jour. Obst. and Gynec., 1929, xviii., 189; Microcephalic Idiocy, with D. P. Murphy, Ibid., 696.
4. Amer. Jour. Roentgen and Radium Therapy, 1929, xxii., 322 (N.Y.C.).
5. Ibid., p. 207.
6. Ovarian Irradiation. Amer. Jour. Obst. and Gynec., 1928, xvi., 547.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

Protection of Dogs Bill.

IN the House of Commons on Wednesday, Nov. 5th, Sir R. GOWER introduced the Protection of Dogs Bill, a measure to prohibit the vivisection of dogs. The Bill was supported by Lieut.-Colonel Moore, Mr. Freeman, Lieut.-Commander Kenworthy, and Mr. Markham.

School Attendance Bill.

On Thursday, Nov. 6th, Sir C. TREVELYAN (President of the Board of Education), in moving the second reading of the Education (School Attendance) Bill, asked what could be more extremely important than giving another year of school life to 500,000 children? The object of the present great reorganisation of the educational system was to ensure a real education between the ages of 11 and 15 in schools devoted to that purpose. In general there was agreement as to most of the principles of that reorganisation. A definite and important part of the reorganisation proposed by the Hadow Committee, and which was being prepared for now by the local education authorities, was the raising of the school leaving age. In the educational world there was hardly an effective challenge to that proposal with the exception of Lord Eustace Percy, the former President of the Board of Education. What was good enough for the children of the well-to-do was surely good enough for the children of the working-classes. If this Bill was passed the change could be affected in April, 1931. The Bill was more liberal to the claimants for maintenance grants than the proposals made by the Committee of the Local Education Authorities in the past summer. The parents who claimed these grants would be required to make a simple declaration of income. That declaration could be challenged in Court, and, if false, the parent could be severely punished. In fixing the income limit he had taken a standard which was sufficiently high to include all wage-earning families where by any stretch of argument the need could be regarded as considerable. This Bill was the charter of the average child. Much of the most vigorous talent lay dormant until 14 or 15. More and more it was upon the average child that the future of the nation depended.

Lord EUSTACE PERCY, in moving the rejection of the Bill, said that one of the admitted needs of the present day was that by every possible means they should maintain the purchasing power of the masses of the people and maintain the employing part of what he might call the employing classes. The country had got to the stage where any reduction of income of any class in the community was reflected, either in the reduction of purchasing power, or in the reduction of employing power. According to Sir C. Trevelyan's figures—which he (Lord E. Percy) thought were an under-estimate—after paying the maintenance allowances to the parents they were reducing the weekly budget of some 300,000 families in this country by 7*s.* per week; and in the second place they were increasing the taxation on the employing classes by at least £7,000,000 to £9,000,000 a year. This would lead to more unemployment.

EFFECT ON SCHOOL CHILDREN'S HEALTH.

Dr. FORGAN, supporting the Bill, said he would like to refer to its effect on the health of the children of the nation. It was generally admitted that the school medical service had been responsible for considerable improvement in the health of the children. Unfortunately from the school leaving age of 14 until 16, a period in the lives of boys and girls when they became young men and young women and were specially in need of medical attention and supervision, there was no State provision for the care of the health of these young persons. The fact that this Bill would extend the school medical service to some 500,000 boys and girls would be a positive benefit which would mean in time to come a direct financial saving. From the medical point of view he heartily supported the measure.

Dr. VERNON DAVIES said that he was a great supporter of education, but he recognised that education had two distinct purposes—first, to educate the child so as to make him a decent intelligent citizen, and secondly to fit him to earn his living. If these children were going to be kept at school for an extra year were they and the community generally going to benefit? Could the workers and the industries of the country afford this Bill? The Government were the custodians of the public purse, and members of Parliament were not sent to that House to squander money. He submitted that at the present time the country could not afford the expense entailed by this measure.

Dr. HASTINGS said that in a comparatively few years they had provided for every child in the elementary schools not only medical inspection, but medical treatment as well. In some cases that medical treatment was admirable, but in other cases it was not so good. The result of this inspection had been to show that there was a tremendous amount of disease among the children. He had looked up the figures in the report of the Chief Medical Officer of the Board of Education, and in 1928 over 20 per cent. of the children had defects needing treatment other than for teeth, and 67·5 per cent. needed dental attention. There could be no doubt about the admirable results of the treatment that had been given. In his report for 1923 the Chief Medical Officer took up the question of deafness, and in London the amount of deafness in 10 years among children in elementary schools had decreased to one half. The report gave details showing that even better results were being obtained in Cambridge, Exeter, and elsewhere. But children coming to school at the age of 5 showed no decrease in the amount of ear disease. When the children took

their place in industry they had the panel medical service, and that had been of value from a public health point of view, and had provided medical treatment for a large class of people who never before obtained it. His point was that between the termination of treatment by the school medical service and the commencement of that given by the national insurance service there was a gap. That gap came at a very critical time in the life of the child when he earned poor wages and sometimes no wages at all. A child at 14 or 15 did not realise the importance of the early treatment of disease, and frequently put things off as long as he could. He had asked the President of the Board of Education that day whether it was not possible to do something to close that gap by passing on the records obtained from the inspection of school-children to the panel committee. It seemed to him that if they increased the school age, even by a year, they would do a great deal for public health by adding an extra year's preventive treatment to the lives of the great mass of the nation's children.

After further debate,

Mr. MORGAN JONES (Parliamentary Secretary to the Board of Education), replying to the debate, said that he was confident that if the measure was accepted by the House the nation would be able to secure that the coming generation, strong in physique and alert in intelligence, would be able to carry the national burden in the days of difficulty and complexity, which no doubt lay before us, on to a prosperity greater perhaps than we now dared hope.

The Bill was read a second time by 294 votes to 227 —Government majority 67.

HOUSE OF COMMONS.

WEDNESDAY, NOVEMBER 5TH.

Experiments on Living Animals.

Mr. BROMLEY asked the Home Secretary if he had had his attention drawn to a recent case where a science teacher at Haverthwaite illustrated a lesson to his pupils by the vivisection of a cat, which he had chloroformed for the purpose; whether the teacher had a licence to vivisect, and also if the school where the incident took place was a registered place under the Act of 1876; and if he would take steps to prevent such practices.—Mr. SHORT replied: My hon. friend has been misinformed; there was no vivisection in this case. The animal was painlessly killed, and next day its body was brought to school and dissected. Such proceedings are not within the Act and require no licence, and my right hon. friend has no power to take any action in the matter.

An Overdose of Medinal.

Viscount ELMLEY asked the Home Secretary whether he proposed to take any action with regard to the evidence given at a recent inquest in Liverpool on a woman who had died from an overdose of medinal.—Mr. CLYNES replied: Under the existing law I have no power to take any action in this matter, but the Government have under consideration the question of introducing legislation to give effect to the recommendations of the recent Committee on the Poisons and Pharmacy Acts, one of which was to the effect that power be given to prohibit by rule the sale of certain poisons, except on a medical prescription.

Housing Progress.

Mr. DAY asked the Minister of Health the number of houses completed in England and Wales during the year ended to the last convenient date, giving the number of these houses separately that were completed in the London area.—Mr. GREENWOOD replied: The number of houses of a rateable value not exceeding £78 (£105 in the Metropolitan Police District) completed during the year ended March 31st, 1930, in England and Wales was 202,060, of which 5718 were completed in the County of London, or on estates of the London County Council outside the county boundary.

Sir KINGSLEY WOOD asked the Minister of Health the number of houses finished under the various Housing Acts each quarter since June 1929; and the number of houses during the same period erected without State assistance.—Mr. GREENWOOD replied: The following statement gives the desired particulars so far as State-assisted houses in England and Wales are concerned:—

Quarter ended—	Housing, Town Planning &c. Act—		Housing (Financial Provisions) Act, 1924.
	1919.	1923.	
Sept. 30th, 1929 ..	18	39,227	17,730
Dec. 31st, ,, ..	14	—	14,507
March 31st, 1930 ..	—	—	10,571
June 30th, ,, ..	—	—	11,351
Sept. 30th, ,, ..	—	—	14,881

Returns as to houses erected without State assistance are obtained half-yearly only, to the end of March and September respectively. The number of such houses of a rateable value not exceeding £78 (or £105 in the Metropolitan Police District) erected during the six months ended September, 1929, was 38,298, and during the six months ended in March last, 53,393. Complete figures for the six months ended in September last are not yet available.

Sir KINGSLEY WOOD asked the Minister of Health to give the latest returns showing the progress under the Housing (Rural Workers) Act, 1926.—Mr. GREENWOOD replied: Up to the end of June last, the latest date to which complete information is at present available, assistance had been promised under the Housing (Rural Workers) Act, 1926, in respect of 3308 dwellings in England and Wales. Work had been finished on 2206 dwellings, and was in progress at that date on a further 818 dwellings.

Mr. RAMSBOTHAM asked the Minister of Health whether the housing shortage was definitely at an end; and, if not, where such shortage existed in acute form.—Mr. GREENWOOD replied: It is common knowledge that there is still a widespread shortage of working-class houses. I shall be better able to judge its local incidence in presence of the results of the survey prescribed by Section 25 of the Act of 1930, to be made by local authorities.

Slum-clearance Schemes.

Sir KINGSLEY WOOD asked the Minister of Health the number of slum-clearance schemes since March 31st, 1930, to the last convenient date, confirmed, completed and in course of execution at the end of such period, respectively.—Mr. GREENWOOD replied: At June 30th, 1930 (the latest date to which complete figures are at present available), 71 slum-clearance schemes remained to be completed in England and Wales. Two such schemes were completed between March 31st, 1930, and June 30th, 1930, and none was confirmed during that period.

Sir KINGSLEY WOOD asked the Minister of Health the number of buildings which had since March 31st, 1930, been acquired by local authorities in connexion with approved slum-clearance schemes.—Mr. GREENWOOD replied: The number acquired in England and Wales between March 31st, 1930, and June 30th, 1930, the latest date to which complete figures are at present available, was 463.

Factory Conditions in East London.

Major NATHAN asked the Home Secretary whether he had received the report of the chief inspector of factories as to conditions in many workshops and factories in the boot and shoe industry in East London. —Mr. CLYNES replied: Recent reports by the factory inspectors on all the factories and workshops now working confirm the previous inquiries, the result of which I gave in my reply to my hon. friend the Member for Frome on June 5th last. They show

that it is only in a very small proportion of the works—about 10 out of a total of 172—that poor or bad conditions prevailed. About one half are definitely reported on as good, while the remainder reach on the whole a satisfactory standard. In all cases where irregularities were found action has been taken to enforce the Act, and the conditions are reported to have much improved.

School Medical Records.

Dr. HASTINGS asked the President of the Board of Education whether in view of the importance of medical records in connexion with the prevention and cure of disease, he was willing to authorise local education committees to transfer to local insurance committees, when so requested, copies of the medical records of children leaving school.—Sir CHARLES TREVELYAN replied: In view of the administrative difficulties involved, and the interval which is likely generally to elapse between the age at which a child is last medically inspected in school and the age at which the first application for medical benefit is made, I am not at present satisfied that I should be justified in advising local education authorities to make so important a departure from the existing practice. In this connexion I would remind my hon. friend that the Board have always impressed upon local education authorities the importance of securing that the school medical records are treated as strictly confidential.

Dr. HASTINGS: Have any applications been received for these records?

Sir C. TREVELYAN: I am not aware of any.

MONDAY, NOV. 10TH.

Preliminary Opium Conference.

Mr. MANDER asked the Home Secretary if he could make any statement as to the progress and the proposals made at the preliminary opium conference recently opened in London.—Mr. CLYNES replied: I am informed that considerable progress has been made with the consideration of the matters referred to the preliminary conference, and that it is hoped to submit a report in the course of a few days.

Use of Poison Gas in Warfare.

Mr. GRAHAM WHITE asked the Secretary for Foreign Affairs the names of States which had formally pledged themselves, by treaty or otherwise, to abstain in future from the use in war of asphyxiating or poisonous gases or liquids or similar noxious substances; and the names of States, if any, which had further pledged themselves to coöperate in the prevention by international action of the use of such substances in warfare.—Mr. HENDERSON replied: Twenty-seven States have both signed and ratified the Geneva Protocol of June 17th, 1925. Nineteen other States have signed, or otherwise acceded to, this Protocol, but have not yet ratified it. All States bound by the Protocol undertake to exert every effort to induce other States to accede to it. The following States have both signed and ratified the Geneva Protocol of June 17th, 1925: Austria, Belgium, United Kingdom of Great Britain and Northern Ireland, Canada, Australia, New Zealand, Union of South Africa, Irish Free State, India, China, Denmark, Egypt, Finland, France, Germany, Italy, Liberia, Persia, Poland, Portugal, Roumania, Spain, Union of Soviet Socialist Republics, Sweden, Turkey, Venezuela, Yugoslavia. The following have signed, or otherwise acceded, but have not yet ratified: Abyssinia, United States of America, Brazil, Bulgaria, Chile, Czecho-Slovakia, Estonia, Greece, Japan, Latvia, Lithuania, Luxembourg, Netherlands (including the Netherlands Indies, Surinam, and Curacao), Nicaragua, Norway, Salvador, Siam, Switzerland, Uruguay.

War Pensioners and Institutional Treatment.

Mr. D. G. SOMERVILLE asked the Minister of Pensions the number of men wounded in the war for whom his department still provided institutional treatment.—Mr. ROBERTS replied: The average number of disabled ex-Service officers and men (apart from cases of mental disease in mental hospitals) for whom my department is providing institutional treatment, whether for wounds or diseases, is, in round figures, 4000. The number of cases of wounds requiring treatment cannot be separately stated, but about one-fourth of the whole number are in hospital for surgical treatment.

Closing of Bellahouston Hospital.

Mr. STEPHEN asked the Minister of Pensions when he proposed to close Bellahouston Hospital, Glasgow; and what steps he proposed to take to provide for the large number of ex-Service men in Glasgow and the West of Scotland in need of hospital treatment.—Mr. ROBERTS replied: After careful consideration I have decided that Bellahouston Hospital cannot justifiably be maintained beyond a date early in the new year, so that the premises may be handed back to the Red Cross and the necessary reinstatements completed by the date of the expiry of the lease. I have arranged with the committee of Erskine House for the use of that hospital for the type of case at present treated at Bellahouston. The patients will be under the care of the same surgeon as heretofore. I have also made arrangements with the Glasgow Royal Infirmary for the immediate admission of any case requiring urgent emergency treatment. All out-patients will be treated at the Glasgow Area Clinic.

Ophthalmic Treatment of School-children.

Mr. DAY asked the President of the Board of Education the number of children provided with spectacles in England and Wales under the arrangement made by education authorities for the 12 months ended to the last convenient date; and the number of authorities in England and Wales who had not the services of an experienced oculist.—Sir CHARLES TREVELYAN replied: Some 140,000 children were provided with spectacles during the year 1929, under arrangements made by education authorities in England and Wales. All local education authorities have the services of an experienced oculist, except the authority for the Isles of Scilly, where the circumstances are, of course, exceptional.

Diphtheria in Kohat.

Colonel HOWARD-BURY asked the Secretary for India whether he was aware that diphtheria had been prevalent in Kohat for a year, and that the disease had been almost entirely confined to British officers and their families, and whether any steps had been taken to trace the disease to its source and to prevent its future recurrence.—Mr. WEDGWOOD BENN replied: I have not received any information on the subject, but will inquire if the hon. Member so desires.

TUESDAY, NOV. 11TH.

Irish Hospitals Sweepstake.

Sir WILLIAM DAVISON asked the Chancellor of the Exchequer whether his attention had been called to the sums of money leaving this country for investment in the Irish Free State sweepstake; and whether he had in contemplation the issue of premium bonds or other similar device to secure the retention of such moneys in this country.—Mr. PETHICK-LAWRENCE (Financial Secretary to the Treasury) replied: The answer to both parts of the question is in the negative.

Sir WILLIAM DAVISON asked if the hon. gentleman was aware that hundreds of thousands of pounds were leaving this country for the Irish Free State in this connexion, that a much larger sweepstake was contemplated, and if he would not do something to meet the sporting instincts of the country in the way of premium bonds which would be both an investment and a lottery.

MEDICINE AND THE LAW.

Revivalism and Orthopædics.

THE possibility of unfortunate results following a faith-healing campaign was considered by the Stoke-on-Trent City Council at the end of last month. Many thousands of people in the potteries district are said to have been drawn to revivalist meetings conducted locally by Pastor Edward Jeffreys, a Welsh evangelist. At these meetings, it has been stated, crippled children for whose treatment the city corporation is responsible have been dealt with in a manner likely to retard their recovery. It was alleged, for example, that three child patients undergoing treatment for tuberculous disease of the spine were taken out of the frames on which they had been fixed. A boy suffering from shortening of the leg, who had been fitted at the hospital with a raised boot and calliper to prevent spinal distortion, had the calliper removed. Allegations of this nature were set out in a letter addressed to the medical officer of health (Dr. A. Wotherspoon) by Mr. W. Mitchell Smith, orthopædic surgeon to the North Staffordshire Cripples' Hospital. The letter was brought to the notice of the health committee of the council. After further consideration of the matter by the general purposes committee, the town clerk was instructed to inform Pastor Jeffreys that, while the corporation had no desire to interfere with his meetings, an undertaking would be required of him that he would not so deal in future with the children for whom the corporation was responsible. Pastor Jeffreys, on the other hand, is reported to have denied that any splints or irons have been removed by him from anyone attending his revival meetings; he claims that no one has left his meetings in any worse condition than that in which they came. He is said to have asserted in the course of an address "We say that the people are healed through Jesus Christ and the doctors don't like it," and to have claimed that there have been outstanding cases of healing which no doctor can dispute.

The City Council seems to be on firm ground in interfering on behalf of the children entrusted to its care. The case of adults, who are free to adopt any treatment they wish, is different. Those who have experience on the one hand of the remarkable results of faith healing, and on the other hand of the inevitable disappointments, will know that the warnings of the medical profession are not to be dismissed as the mere outcome of religious scepticism and professional prejudice.

MEDICAL NEWS

University of London.

Prof. G. E. Gask, director of the surgical unit at St. Bartholomew's Hospital, has been elected Dean of the Faculty of Medicine for 1930–32.

As a result of the M.D. examination in July the University medal in medicine has been awarded to Thomas Anwyl Davies, of St. Thomas's Hospital, and in pathology to Dorothy Stuart Russell, of the London Hospital.

C. L. Oakley, M.B., has been appointed Graham Scholar in Pathology at University College Hospital for two years.

Application is invited for the Geoffrey Duveen travelling studentship in oto-rhino-laryngology, of the value of £450. Candidates must be medical graduates of the University, and should apply in prescribed form to the Academic Registrar before Dec. 31st.

The Nathaniel Rogers prize for 1931, valued at £100, is offered to registered medical practitioners for an essay on Filtrable Viruses as a Cause of Disease in Man. Particulars are obtainable from the Academic Registrar.

Five lectures on Diseases of Bacteria will be given by Dr. F. W. Twort, F.R.S., superintendent of the Brown Animal Sanatory Institution, in the theatre of the Royal College of Surgeons, Lincoln's Inn-fields, London, W.C., at 4 P.M., on Dec. 1st, 3rd, 5th, 8th, and 10th.

Medico-Chirurgical Society of Edinburgh.

The following are the office-bearers for 1929–30:—President: Prof. G. Lovell Gulland. Vice-Presidents: Mr. J. W. Dowden, Dr. E. F. Armour, and Dr. John Bowie. Councillors: Dr. C. W. Somerville, Dr. W. Fordyce, Dr. H. G. Langwill, Dr. Alex. Goodall, Dr. F. K. Kerr, Dr. Norman Carmichael, Dr. H. Maitland Moir, and Mr. A. Pirie Watson. Treasurer: Dr. John Orr. Secretaries: Dr. H. L. Watson Wemyss and Mr. F. E. Jardine. Editor of Transactions: Dr. Fergus Hewat.

Royal College of Physicians of Edinburgh.

A quarterly meeting of the College was held on Nov. 4th with Sir Norman Walker, the President, in the chair. Dr. Henry Leonard Wallace (Edinburgh) and Dr. William Brown (Aberdeen) were introduced and took their seats as Fellows. Dr. Earle Macbeth Watson (Ontario), Dr. William Archibald Hain (Bournemouth), Dr. Agnes Rose Macgregor (Edinburgh), and Dr. James Davidson (Edinburgh) were elected to the Fellowship. The Hill Pattison-Struthers bursary in anatomy and physiology was awarded to Maurice Goldfar, and the Hill Pattison-Struthers bursary in clinical medicine to Robert Leitch Allan.

Royal Faculty of Physicians and Surgeons of Glasgow.

The following will be the office-bearers for the coming year:—President: Dr. John F. Fergus. Visitor: Mr. R. Barclay Ness. Treasurer: Dr. J. H. MacDonald. Librarian: Dr. E. H. L. Oliphant. Councillors: Mr. G. H. Edington (representative of the Faculty on the General Medical Council), Dr. Andrew Alison, Dr. R. M. Buchanan, Mr. J. G. Connal, Dr. Carstairs Douglas, Dr. John Gracie, Dr. John Henderson, Mr. W. D. Macfarlane, Dr. Souttar McKendrick, Mr. Ferguson Mackenzie, and Prof. Archibald Young.

Socialist Medical Association.

At a recent meeting it was decided to form an organisation with this title. The following officers and committee were elected:—President: Mr. Somerville Hastings, M.S., M.P. Trustees: Dr. Hector Munro and Dr. V. H. Rutherford. Treasurer: Dr. Alfred Welply. Secretary: Dr. C. W. Brook. Executive Committee: Dr. Alfred Salter, M.P., Dr. R. Forgan, M.P., Miss Esther Rickards, M.S., L.C.C., Dr. Caroline Maule, Dr. Frank Bushnell, Dr. S. W. Jeger, Dr. A. V. R. Menon, Dr. J. Grant Morrin, Dr. J. Powell-Evans, and Dr. M. Rose.

Finances of University College Hospital.

On Thursday last week Prince George presided at a dinner at the Mansion House in aid of the funds of this hospital, when the amount collected, including the result of the dinner appeal, was £6500. It was stated that in the last ten years the number of beds had increased from 322 to 540, which had swollen the annual expenditure by £16,000. In the current year the expenditure will be £112,000, of which £12,000 will have to be provided by further voluntary contributions.

University of Aberdeen.

Sir Arthur Keith, conservator of the museum of the Royal College of Surgeons of England, has been elected Rector of the University of Aberdeen. Sir Arthur stood as an independent candidate and defeated Mr. John Buchan, M.P., who was nominated as a Conservative.

Society of Apothecaries of London.

Lieut.-Colonel C. T. Samman, the Master of the Society, will preside at a dinner to be held on Tuesday next, Nov. 18th, when the honorary freedom of the Society will be conferred on Mr. Arthur Greenwood, Minister of Health. The gold medal for pharmacy will be awarded to Prof. Ernest Fourneau, of the Pasteur Institute, Paris.

Extension of Edinburgh Infirmary.

An appeal is being made for £500,000 for the extension of this great hospital. The principal objects of the enlargement are the reduction of the waiting lists of between 2000 and 3000 names, mostly of persons needing surgical treatment, the provision of a combined obstetrical and gynæcological hospital of 240 beds, and a nurses' home.

An Association of Hospital Contributory Schemes.

At a conference of representatives of hospital contributory schemes at Birmingham last week it was decided to establish an association for the coördination of such efforts. Besides being a clearing-house for information, the new body will make suggestions, assist associated schemes in cases of difficulty, and be at the disposal of seekers for information when contemplating the establishment of new schemes.

A Montgomeryshire War Memorial Hospital.

A war memorial hospital for the county of Montgomery was opened last week at Llandiloes by Miss Jones, daughter of Sir Robert Jones.

South-Eastern Hospital for Children.

At the recent dinner at Merchant Taylors' Hall on behalf of this hospital £11,000 was raised.

A Railwaymen's Cot.

The Bishop of Portsmouth recently dedicated a cot in the Southern Railway Servants' Orphanage at Woking presented by the Portsmouth district committee of the institution.

Stannington Sanatorium.

A new operating theatre and X ray room have been opened at the Philipson Children's Sanatorium at Stannington, Northumberland, which contains 300 poor children.

Swindon Victoria Hospital.

Last week Lady Lansdowne opened a new wing of the Swindon and North Wilts. Victoria Hospital. Two new wards of 40 beds have been added.

Manchester Royal Infirmary Nurses' Home.

The Lord Mayor of Manchester last week opened the new nurses' home of this hospital. It will now be possible to increase the staff by 72 nurses and to establish an average working week of 56 hours. The building, which has cost £140,000, of which £60,000 remains to be raised, provides 168 bed-sitting-rooms, a number of corporate sitting-rooms, writing rooms, and a large recreation hall, the cost of which, £10,653, was raised by the nurses themselves.

"Friends of Aldershot Hospital."

Under this title an organisation has been formed for rendering personal service to Aldershot Hospital. The only financial obligation is the payment of sixpence a year, and the members register their names for sewing, mending, gardening, egg-collecting, taking patients home on discharge, and any kind of simple job for the hospital that may be required.

Enlargement of Harrow Hospital.

Miss Diana Churchill, daughter of Mr. Winston Churchill, recently opened new nurses' quarters at this hospital to which the name of Florence Nightingale has been given. Other extensive additions are in progress. An operating theatre, an X ray department, new wards for general patients, and private wards for paying patients are among these additions. The hospital is warmed by "invisible heating" which can be personally controlled to the desired temperature, and an appeal is being made for £50,000 to cover the cost of the enlargements.

Bristol Hospital Service.

The Bristol Hospitals Committee has launched an appeal for £250,000 for modernising and extending the city's hospitals. The money, which it is hoped to raise in seven years, will be used for the following purposes, the number of additional beds being stated in parenthesis: New hospital at Winford (100); reconstruction and enlargement of the Eye Hospital (50); additions to the Royal Infirmary (30); additions to the General Hospital (14); enlargement of Winford Orthopædic Hospital (60); reconstruction and additions to the Children's Hospital, including an outpatients' department and a new nurses' home; additions to the Homœopathic Hospital and enlargement of the outpatients' department.

Motor Accidents and Hospital Treatment.

The Motor Vehicles and Road Traffic Bill, which has been read a second time in the Parliament of Northern Ireland, provides that, when an insured person injured in a road accident is treated in hospital, the authorised insurer or owner will be liable for the cost of treatment up to £25.

Ashton-under-Lyne Hospital.

The governors of the Ashton-under-Lyne District Infirmary have decided, owing to the large debt, that the Summers wing—nearly half the accommodation—will have to close. The infirmary has a debt of £16,000, and they have only about £2000 to meet current liabilities of £3000.

West Ham Children's Hospital.

Mrs. Parsons, chairman of the hospitals committee of the West Ham town council, recently opened a new municipal children's hospital at Harold Wood. The buildings, which have cost £41,000, consist of four blocks, each containing two wards, with two single-bed wards for special cases. Altogether there is fresh accommodation for 116 patients.

Medical Diary

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Nov. 18th.—5.30 P.M., GENERAL MEETING OF FELLOWS. 8 P.M., PATHOLOGY.

THURSDAY.—5 P.M., DERMATOLOGY. (Cases at 4 P.M.) Demonstration: Mr. Duncan C. L. Fitzwilliams (introduced by Dr. E. Graham Little): Rodent Ulcer and Lupus Vulgaris. Dr. H. Corsi: Alopecia Totalis (Cured by Ultra-violet Light). Case for Diagnosis; ? Plexiform Neuroma. Dr. M. Horan (for Dr. W. J. O'Donovan): Extensive Hairy Pigmented Nævus. Dr. H. W. Barber: Nævus Unius Lateralis; Angeioma Serpiginosum. Dr. Knowsley Sibley: Lichen Nitidus. Other cases will be shown. 8 P.M., ANNUAL DINNER OF THE SOCIETY, May Fair Hotel.

FRIDAY.—5 P.M., BALNEOLOGY AND CLIMATOLOGY. Presidential Address: Dr. F. G. Thomson: The Rôle of Hydrology in Preventive Medicine. 7.30 P.M., Annual Dinner of the Section at the Welbeck Palace Hotel. 8 P.M., OBSTETRICS AND GYNÆCOLOGY. Specimens: Mr. John H. Hannan: 1. Large Bilateral Krukenberg's Tumours of the Ovary. 2. Endothelioma of the Ovary. 3. A Peri-urethral Fibroma. 4. Dermoid Cyst of the Ovary with a Basal Celled Carcinoma in its Wall. 5. Carcinoma of the Body of the Uterus from a Young Woman. 6. Carcinoma of the Fallopian Tube (slide). 7. Primary Carcinoma of the Urethra (slide). Discussion on the Interim Report of the Departmental Committee on Maternal Mortality and Morbidity. Openers: Dr. T. Watts Eden and Dr. J. S. Fairbairn. 8.30 P.M., ELECTRO-THERAPEUTICS. (Cases at 7.30 P.M.) Dr. Justina Wilson: 1, 2, and 3. Tuberculosis Cutis. 4. Arthritis of the Shoulder Joint with Brachialgia. Treated by Diathermy. Dr. E. P. Cumberbatch: 5. Old-standing Lupus Vulgaris. Dr. C. A. Robinson: 6. Cervicitis Treatment by Diathermy. Sir Robert Stanton Woods: 7, 8, and 9. Subacute Dermatomyositis. Dr. L. D. Bailey: 10. Mal-union or Radius Treated by Diathermy. Dr. E. J. Deck: 11 and 12. Intra-pelvic Protusion of Acetabulæ.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

WEDNESDAY, Nov. 19th.—5 P.M., Prof. William Rothenstein: Painting and the Healing Art (Lloyd Roberts Lecture).

HUNTERIAN SOCIETY.

MONDAY, Nov. 17th.—9 P.M. (at The Cutlers' Hall, Warwick-lane, London), Discussion on The Place of the Doctor in Industry, when the following have promised to take part: Sir David Milne-Watson, Mr. W. A. Appleton, Prof. E. L. Collis, and Dr. Strickland Goodall.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

THURSDAY, Nov. 20th.—8.15 P.M. (at the Hospital for Tropical Diseases, Endsleigh-gardens, Gordon-street, W.C.), Demonstrations by Sir Aldo Castellani, Sir Thomas Carey Evans and Dr. G. R. Mather Cordiner, Dr. N. Hamilton Fairley, Dr. E. P. Hicks, Col. S. P. James, Dr. G. Carmichael Low, Mr. John F. Marshall, Drs. P. Manson-Bahr, W. Salisbury Sharpe, H. S. Stannus, Prof. Warrington Yorke, Dr. D. Uvedale Owen, and others. During the evening a short cinema film illustrating beri-beri will be shown; and the Manson lecture theatre, the new laboratories, operating theatre, X ray department and wards will be open for inspection.

ROYAL INSTITUTION, 21, Albemarle-street, W.
THURSDAY, Nov. 20th.—5.15 P.M., Mr. L. C. Martin, D.Sc.: Colour Vision (1).

LONDON CLINICAL SOCIETY.
TUESDAY, Nov. 18th.—8 30 P.M. (at the London Temperance Hospital), Annual General Meeting and Clinical Evening.

ROYAL MICROSCOPICAL SOCIETY, B.M.A. House, Tavistock-square, London, W.C.
WEDNESDAY, Nov. 19th.—5 P.M., Mr. R. J. Bracey, F.Inst.P.: A Universal Tube Length and Cover-glass Correcting Lens System for Use with Microscope Object-Glasses. Dr. W. E. Cooke and Mr. C. F. Hill, M.Inst.M.M.: Microscopical Studies in Pernicious Anæmia. I.—The Hæmoglobiniferous Cells.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.
MONDAY, Nov. 17th.—5 P.M., Mr. C. P. G. Wakeley: Demonstration of Specimens Illustrating the Pathological Conditions of the Spine and Spinal Cord.
FRIDAY.—5 P.M., Sir Arthur Keith: Specimens Illustrating Enlargement of the Prostate, with an Account of Our Knowledge of the Ætiology of the Condition.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, Nov. 17th to SATURDAY, Nov. 22nd.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, Special M.R.C.P. Lectures at 8.30 P.M., as follows: Tues., Dr. T. Izod Bennett: The Conception of Nephrosis. Fri., Dr. W. J. Adie: Diseases of the Nervous System (1). Mon., at 4 P.M., Free lecture by Mr. L. C. Rivett: Recent Advances in Gynæcology and Obstetrics.—GOLDEN-SQUARE THROAT HOSPITAL, W., Mon., Out-patient Demonstration at 2 P.M. by Mr. F. C. Ormerod. No fee for attendance.—KING'S COLLEGE HOSPITAL, Denmark-hill, S.E. Wed., Neurological demonstration in Out-patient Department at 2 P.M., by Dr. M. Critchley. No fee for attendance.—ROYAL NORTHERN HOSPITAL, Holloway-road, N. Wed. at 6 P.M., Demonstration on Gonorrhœa in the Female by Dr. Violet Russell.—Women graduates only admitted. No fee for attendance.—CITY OF LONDON HOSPITAL, Victoria Park, E. Special post-graduate course in diseases of the Heart and Lungs. All day.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Second week of special course in medicine, surgery, and gynæcology. WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck-street, W. Special post-graduate course in Neurology. Daily at 5 P.M.—LONDON LOCK HOSPITAL, Dean-street, W. Third week of post-graduate course in Venereal disease.—Further particulars from the Fellowship of Medicine.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.
MONDAY, Nov. 17th.—10 A.M. to 1 P.M., Surgical Wards, Genito-Urinary Operations, Skin Department. 2 P.M., Operations, Surgical Wards, Medical, Surgical, Eye and Gynæcological Out-patients.
TUESDAY.—10 A.M. to 1 P.M., Medical Wards, Clinical Demonstration (Surgical), Dental Department. 2 P.M., Operations, Medical, Surgical, and Throat Out-patients.
WEDNESDAY.—10 A.M. to 1 P.M., Medical and Surgical Wards, Children's Medical Out-patients. 2 P.M., Gynæcological and General Operations, Medical, Surgical, and Eye Out-patients.
THURSDAY.—10 A.M. to 1 P.M., Neurological Out-patients, Demonstration of Fractures. 2 P.M., Operations, Medical, Surgical, and Genito-Urinary Out-patients.
FRIDAY.—10 A.M. to 1 P.M., Medical Wards, Skin Department, Dental Department, Clinical Demonstration (Medical). 2 P.M., Operations, Medical, Surgical, and Throat Out-patients.
SATURDAY.—10 A.M. to 1 P.M., Throat Operations, Bacterial Therapy Department, Medical Wards, Children's Medical and Surgical Out-patients.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, Nov. 17th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose, and Throat Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Throat, and Ear Clinics. Operations.
FRIDAY.—10.30 A.M.: Ear, Nose, and Throat Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Children's Diseases Clinics. Operations.

KING'S COLLEGE, Strand, W.C.
THURSDAY, Nov. 20th.—5 P.M., Mr. W. Robson, D.Sc.: Protein Metabolism (Second of four lectures.)

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark hill, S.E.
THURSDAY, Nov. 20th.—9 P.M., Dr. J. L. Livingstone Functional Disorders of the Colon.

UNIVERSITY COLLEGE, Gower-street, W.C.
MONDAY, Nov. 17th.—5 P.M., Mr. L. E. Bayliss, Ph.D.: Respiratory Functions of the Blood. (Second of four lectures.)

NATIONAL HOSPITAL, Queen-square, W.C.
MONDAY, Nov. 17th.—12 noon, Dr. Greenfield: Deficiency Diseases. 2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Kinnier Wilson: Alcoholism.
TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Mr. Armour: Craniocerebral Topography.
WEDNESDAY.—2 P.M., Dr. Martin: Out-patient Clinic.
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Riddoch: Myasthenia Gravis.
FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M. Dr. James Collier: Acute Diseases of the Spinal Cord and Brain Stem.

BRITISH INSTITUTE OF RADIOLOGY, INCORPORATED WITH THE RONTGEN SOCIETY, 32, Welbeck-street, London, W.
THURSDAY, Nov. 20th.—8.30 P.M., Mr. G. Simon: Diathermy in Pneumonia. The place of Diathermy as a therapeutic agent in pneumonia. Detailed description of technique used and reasons for the adoption of this technique. Dr. A. Müller, Ph.D.: An X Ray Generator with a Rotating Water-Cooled Target.
FRIDAY.—2 P.M.–4 P.M., Visit to the Radiological Department of Charing Cross Hospital.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, Nov. 18th.—5 P.M., Dr. H. W. Barber: Bacteriology and Mycology.
THURSDAY.—5 P.M., Dr. I. Muende: Pathology Demonstration.

CITY OF LONDON MATERNITY HOSPITAL, City-road, E.C.
THURSDAY, Nov. 20th.—5 P.M., Dr. J. A. Willett: Importance of Antenatal Care.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.
WEDNESDAY, Nov. 19th.—4 P.M., Dr. Donald Hunter: Calcium and Phosphorus Metabolism.

ST. PAUL'S HOSPITAL, Endell-street, W.C.
WEDNESDAY, Nov. 19th.—4.30 P.M., Mr. Kenneth Walker: Prostatitis and Prostatic Calculi.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.
FRIDAY, Nov. 21st.—4 P.M., Mr. Nicol Rankin: Acute Affections of the Pharynx.

ROYAL NORTHERN HOSPITAL, Holloway-road, W.
TUESDAY, Nov. 18th.—3.15 P.M., Dr. Bruce Williamson: Demonstration of Ward Cases.

THE CHADWICK TRUST.
FRIDAY, Nov. 21st.—7.30 P.M. (at The Town Hall, Gateshead), Dr. Matthew Ray: Treatment of Rheumatism.

INSTITUTE OF HYGIENE, 28, Portland-place, W.
WEDNESDAY, Nov. 19th.—3.30 P.M., Dr. Doris Odlum: The Importance of a Healthy Mind.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
WEDNESDAY, Nov. 19th.—4 P.M., Dr. A. Massey: Prevention of Venereal Disease.
THURSDAY.—4 P.M., Dr. Maude E. Kerslake: Contraceptiv Problems of Destitute or Injured Women.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINIC.
FRIDAY, Nov. 21st.—3.30 P.M. (at the Royal Infirmary), Dr. Barnes: Syphilis of Cardiovascular System.

ST. JOHN'S HOSPITAL, Morden Hill, Lewisham.
MONDAY, Nov. 17th.—4.30 P.M., Dr. John Gibbens: Habitual Vomiting in Infants.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
TUESDAY, Nov. 18th.—4.15 P.M., Mr. D. L. Sewell: Radium and Cancer of the Larynx.
FRIDAY.—4.15 P.M., Dr. D. Stewart: The Function of the Dental Tissues.

ANCOATS HOSPITAL, Manchester.
THURSDAY, Nov. 20th.—11 A.M., Dr. W. J. S. Reid: Clinical Demonstration. 4.15 P.M., Mr. P. G. McEvedy: Minor Surgery

Appointments

BLACKER, C. P., M.B., M.R.C.P. Lond., has been appointed General Secretary of the Eugenics Society.

BOYD, J., M.B., B.Ch. R.U.I., D.P.H., Senior Medical Officer under Medical Benefits Act for Northern Ireland.

GODDARD, C. E., M.D. Durh., L.R.C.P. Lond., M.R.C.S., Medical Officer of Health for Wembley.

KENT, M., M.B., Ch.B. Manch., Assistant School Medical Officer for Derby.

PENROSE, L. S., M.D. Camb., Research Medical Officer, jointly appointed by the Medical Research Council, the Darwin Trust, and the Royal Institution, Colchester.

WARNER, N. S. HEEGAARD, L.D.S. R.C.S. Eng., Honorary Dental Surgeon to the British Dental Hospital, London.

Certifying Surgeons under the Factory and Workshops Acts: IRVING, G., M.D., B.S. Durh. (Stockton-on-Tees), and LAFFERTY, G. P., M.B., B.Ch. N.U.I. (Castleton, Derby).

Vacancies

For further information refer to the advertisement columns.

Aberdeen Royal Mental Hospital.—Jun. Asst. P. £300.

Bethnal Green Hospital, Cambridge-road, E.—Asst. M.O. £350.

Birmingham City Maternity and Child Welfare Committee.—Asst. M.O. £500.

Birmingham General Hospital.—Surg. Cas. O. £400.

Bolton Infirmary and Dispensary.—Two H.S.'s. Each £150. Also Cas. O. At rate of £150.

British Guiana.—Asst. Government M.O.H. £650.

British Hospital for Functional Mental and Nervous Disorders, 72, Camden-road, N.W.—Hon. Physician.

Bury St. Edmunds, West Suffolk General Hospital.—Jun. Res. M.O. £150.

Cairo, Egypt, Kitchener Memorial Hospital.—Sen. M.O. £400.

Cambridge, Addenbrooke's Hospital.—H.P. Also Res. Anæsthetist and Emergency Officer. Each at rate of £130.

Cancer Hospital, Fulham-road, S.W.—H.S. At rate of £100.

Canterbury, Kent and Canterbury Hospital.—Hon. Surg.

Cape Town University.—Assistant Anatomist. £750.

Cardiff Royal Infirmary.—H.S. At rate of £50. Aural H.S., and Cas. Surg. O. Each at rate of £75.

Chester County Mental Hospital.—Jun. Asst. M.O. £350.

City of London Maternity Hospital, City-road, E.C.—Asst. Res. M.O. At rate of £80.

City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—Res. M.O. £250. Also H.P. At rate of £100.

Connaught Hospital, Orford-road, E.—Res. H.S. At rate of £100. Also Hon. Visiting Dental Surgeon.

Elizabeth Garrett Anderson Hospital, Euston-road.—H.P., Obstet. Asst., and Three H.S.'s. Each at rate of £50.

Hackney Hospital, High-street, Homerton, E.—Deputy Med. Supt. £550.

Hendon, Colindale Hospital.—Jun. Asst. M.O. £500.

Hospital for Consumption and Diseases of Chest, Brompton, S.W.—Asst. in Dept. of Pathology. £350.

Hospital for Sick Children, Great Ormond-street, W.C.—Part-time Jun. Cas. O. At rate of £150. Also H.S. and H.P. Each at rate of £100.

Hull Royal Infirmary.—Asst. H.P. At rate of £130.

Ipswich, East Suffolk and Ipswich Hospital.—H.S. £120.

L.C.C.—Jun. Asst. M.O. for Mental Hospital Service. £500. Also 8th Asst. M.O. £445.

Leeds, St. James's Hospital.—H.P. and S. £200.

Leicester Royal Infirmary.—Surgical Dresser. 10s. 6d. per week.

Leyton, Borough of.—Asst. M.O. £500.

Liverpool, Royal Children's Hospital, Myrtle-street.—Res. Cas. O. £250.

London Temperance Hospital, Hampstead-road, N.W.—Cas. O. Also H.P. At rate of £120 and £100 respectively.

Liphook, Hants, King George's Sanatorium for Sailors.—Asst. M.O. At rate of £200.

Liverpool and District Hospital for Diseases of the Heart.—H.P. At rate of £100.

Maidstone, Kent County Ophthalmic and Aural Hospital.—Ophth. H.S. At rate of £200.

Manchester, Ancoats Hospital.—Part-time Med. Reg. and Surg. Reg. Also H.S. All at rate of £100.

Manchester City, Abergele Sanatorium.—Med. Supt. £900.

Manchester Royal Eye Hospital.—Jun. H.S. £120.

Manchester Royal Infirmary.—Med. Reg. £150. Also Res. Clin. Pathologist. £100.

Metropolitan Hospital, Kingsland-road, E.—Asst. M.O. to X Ray and Electrical Dept.

Middlesbrough Education Committee.—Asst. School M.O. £500.

National Hospital, Queen-square.—H.P. £150.

Newcastle General Hospital.—Sen. Res. M.O. £300. Also H.P. and H.S. Each at rate of £100.

Newcastle-upon-Tyne Hospital for Sick Children.—Res. H.P. At rate of £100. Res. Sen. H.S. Also Jun. H.S. Each at rate of £100.

Newcastle-upon-Tyne, Royal Victoria Infirmary.—Hon. Asst. S. to Eye Department.

New Zealand, Hawkes Bay Hospital, Napier.—Pathologist. £750.

Norwich, Jenny Lind Hospital for Children.—Res. M.O. £120.

Plymouth, South Devon and East Cornwall Hospital.—H.P. Also H.S. to Casualty and Special Dept. At rate of £120 and £100 respectively.

Preston, Biddulph Grange Orthopædic Hospital.—Sen. H.S. At rate of £250.

Prince of Wales's General Hospital, N.—Hon. Clin. Assts. to Various Departments.

Princess Louise Kensington Hospital for Children, St. Quintin-avenue, N. Kensington.—Hon. Asst. Anæsthetist and Hon. Assist. Dental Surgeon. Also H.S. At rate of £100.

Queen's Hospital for Children, Hackney-road, E.—H.P. At rate of £100.

Royal College of Surgeons of England.—Election to Court of Examiners.

Royal Free Hospital, Gray's Inn-road, W.C.—Surg. Reg. £200. Res. H.S. to Ear, Nose, and Throat Dept., Res. Cas. O. £150. Res. Anæsthetist to Gynæcological, &c., Unit. £150. Half-time Gynæcological Reg., Med. Reg., and District Obstetric Asst. Each £100. Also Res. H.S.'s, H.P.'s, Asst. Anæsthetist, &c.

Royal National Orthopædic Hospital, Great Portland-street, W.—Hon. Asst. Surg.

Royal Northern Hospital, Holloway, N.—H.S. At rate of £70. Also Two Surgeons.

Ryde, Royal Isle of Wight County Hospital.—Res. H.S. At rate of £180.

St. George's Hospital, S.E.—Sen. and Two Anæsthetists.

St. Giles Hospital, Brunswick-square, S.E.—Two Asst. M.O.'s £350.

Sheffield Royal Hospital.—Ophth. H.S. Also Res. Anæsthetist. Each at rate of £80.

Sidcup, Kent, Queen Mary's Hospital for Convalescent.—Jun. Asst. M.O. £250.

South-Western Fever Hospital, Landor-road, Stockwell, S.W.—Jun. Asst. M.O. £500.

Sunderland, Durham County and Sunderland Eye Infirmary.—H.S. £350.

Todmorden Borough.—M.O.H. and School M.O. £800.

Warwick, Hertford Hill, King Edward VII. Memorial Sanatorium.—Jun. Asst. M.O. At rate of £200.

West Bromwich and District General Hospital.—Hon. Anæsthetist. Also Hon. Asst. Ear, Nose, and Throat Dept.

West Bromwich, Hallam Hospital.—Res. H.P. £250.

West London Hospital, Hammersmith-road, W.—Hon. Reg. to Throat, Nose, and Ear Department.

Wigan, Royal Infirmary.—H.S. At rate of £150.

Willesden General Hospital, N.W.—Hon. Clin. Asst. to Surgical Out-patient Dept.

Willesden Urban District Council.—Public Vaccinator.

Willesden U.D.C., Health Department.—Dentist. £420.

Yelverton, Udal Torre Sanatorium.—Res. M.O. £450.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Silverton (Devonshire), Chichester (Sussex), Dunmow (Essex), Rayleigh (Essex), and New Tredegar (Monmouthshire).

Births, Marriages, and Deaths

BIRTHS.

BARLAS.—On Nov. 2nd, at Crescent-road, Ipswich, the wife of Major A. R. Barlas, R.A.M.C., of a son.

HAWLEY.—On Nov. 2nd, at "Hazelbeech," Eaton-road, Coventry, the wife of Arthur Thomas Hawley, M.A. Camb., F.R.C.S.E., of a son.

SANSOME.—On November 8th, at Sandwell House, West Bromwich, the wife of T. Heywood Sansome, M.B., Ch.B., of a daughter.

SMITH.—On Nov. 6th, at Haddon Lodge, Shooters Hill, S.E., the wife of C. Moore Smith, of a son.

MARRIAGES.

HARDY—MOORE.—On Nov. 7th, at Brighton, George Wilfrid Hardy, M.R.C.S. Eng., L.R.C.P. Lond., of Shoreham, to Dora, third daughter of Mr. and Mrs. Stanley Moore, of Clarendon-terrace, Brighton.

DEATHS.

DAVIES.—On Nov. 5th, after a short illness, at Templecrone, Westcombe Park-road, Blackheath, Hugh Davies, F.R.C.S. Eng., M.B., B.S., of Harley-street, and Llanerfyl, Montgomeryshire.

DAWES.—On Nov. 4th, at Glenthorne, Putney Park-avenue, S.W., Herbert Edwin Tonge Dawes, M.R.C.S., L.R.C.P., aged 49.

GRAHAM.—On Nov. 3rd, at Paignton, Simon Dickson Graham, M.B., C.M. Edin., late R.A.M.C.

HARRIS.—On Nov. 5th, very suddenly, at Queen's-road, S.E., Dr. Edwin Gabriel Harris, M.R.C.S., L.R.C.P. Lond., in his 39th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

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NOTES, COMMENTS, AND ABSTRACTS

HOW TO INDEX.

AN indexer is in this respect like a butler—that the better he does his work the less he is noticed. Dr. Walsh made an index to a book of his own a few years ago and was piqued by his reviewer, who remarked "the book is furnished with a moderately good index," to have another try, when he was rewarded with getting the mark "excellent." The reviewer added parenthetically: "Excellence in indexes is not too common." Dr. Walsh, who is principal assistant in the National Physical Laboratory, has now set out the principles of indexing in a little book of 112 pages[1] which can be read with interest and appreciation by all who have suffered from slovenly and unimaginative indexing. His rules are simple and lucid, and if the writers of medical books can induce their indexers to take them to heart, their readers will be spared much heartburning. The modest price of the book places it within the reach of every indexer. Anyone who thinks that indexing is a task for babes might be asked to say what are the catchwords for the phrase "Method of grinding concave mirrors for reflecting telescopes." Dr. Walsh discards "method" as not sufficiently distinctive to be useful, and suggests himself that the phrase might be indexed under either of two nouns, a gerund, an adjective, or a participle.

EVANS'S LIST.

Messrs. Evans Sons, Lescher, and Webb, Ltd. (Liverpool and London), have brought out their annual price list in an up-to-date form. It is divided into three sections, distinguishable by the colour of the paper, the first containing pharmaceutical and biological products with a therapeutic index, the second, ampoules, capsules, pills, and tablets, and the third surgical instruments and medical sundries. In the prices current of pharmaceutical products care has been taken to mark, with a distinctive sign, articles which are covered by the Dangerous Drugs Regulations, as well as those which come within Part I. and Part II., respectively, of the Poisons Schedule. This is a very convenient arrangement. The list will be sent to any medical practitioner or student who applies to Evans's Biological Institute, Higher Runcorn, Cheshire.

UKUSIZA ABA LIMELE.

THE first-aid movement on the Witwatersrand Gold Mines has made rapid and vigorous growth and its extension to the training of natives in methods of first-aid has been one of its most useful manifestations. The more intelligent native labourers are interested in the subject for its own sake, and this interest is further encouraged by a system of bonuses and badges for those labourers, boss boys and others, who take their first-aid certificates. Inter-mine competitions are arranged and a shield is competed for annually. The excitement among the native spectators at these contests can be intense and their comments are amusing, being caustic or appreciative as the performance of a team seems to them to warrant. The late Dr. H. T. H. Butt, who was, until his recent death, a most valued and active member of the Mine Medical Officers' Association, produced a little book[2] which should be of great service to the natives and their instructors for whom it was prepared. This public being largely illiterate, the letterpress, in the Zulu, Xosa, and Sesuto languages, is reduced to a minimum, but the illustrations are so ample and clear that explanatory notes are unnecessary. It is a compilation that would be useful for a more advanced public than that for which it was intended.

[1] The Indexing of Books and Periodicals. By John W. T. Walsh, M.A., D.Sc., M.I.E.E., Hon. Secretary, International Commission on Illumination. London: Edward Arnold and Co. 1930. 6s.

[2] Ukusiza Aba limele. First Aid Illustrated. By H. T. H. Butt, M.D. Camb. Published by the Prevention of Accidents Committee of the Rand Mutual Assurance Co., Ltd., and authorised by the S.A. Red Cross Society.

SMALL-POX AND THE PUBLIC.

To the Editor of THE LANCET.

SIR,—The letter to a school-teacher from the father of an absent scholar, quoted by Dr. C. Berkeley Way in your issue for Nov. 8th, is so delightfully humorous that we ought to be grateful to Dr. Way for publishing it.

As regards Dr. Way's serious point that the public are now realising the trivial character of variola minor, and talking about "only small-pox," is it not about time that the Ministry of Health, in the interests of preventive medicine, officially sanctioned some alternative name to "small-pox" for this non-fatal, non-disfiguring, inoffensive and trifling affection, and reserved the name "small-pox" for the very serious and fatal disease which really deserves that name?

Some day the public contempt for "small-pox" which has resulted from issuing the same name for two very different things may have disastrous consequences.

I am, Sir, yours faithfully,

C. KILLICK MILLARD.

Health Offices, Leicester, Nov. 11th, 1930.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

W. J. M. Sadler to be Surg. Lt.

ROYAL NAVAL VOLUNTEER RESERVE.

Proby. Surg. Sub-Lt. P. B. Moroney to be Surg. Sub-Lt.

ROYAL ARMY MEDICAL CORPS.

Capts. to be Majs.: D. J. MacDougall, C. A. Slaughter, A. J. Bado, R. R. Evans, D. C. Bowie, G. W. Rose, and G. D. Gripper.

The undermentioned Majs. are restd. to the estabt.: J. W. Hyatt and T. H. Twigg.

Lt. W. F. Cooper to be Capt.

TERRITORIAL ARMY.

Capt. R. V. Powell (late R.A.M.C.) to be Capt.

Lt. H. M. Coope resigns his commn.

ROYAL AIR FORCE.

M. J. Cahalane is granted a temporary commission as a Flight Lt.

Dental Branch: F. F. Kennedy is granted a non-permanent commission as a Flying Officer.

INDIAN MEDICAL SERVICE.

Capt. (prov.) B. N. Hajra is confirmed in rank.

The undermentioned appts. are made: To be Capt. (prov.) (on prob.): Capt. Raghubansa Kishore Tandon, from I.M.S. (T.C.). To be Lts. (on prob.): Lt. Bhagwan Das Khurana, from I.M.S. (T.C.); Lt. Diwan Chand Chopra, from I.M.S. (T.C.); Lt. Jaswant Singh, from I.M.S. (T.C.); Lt. Debi Prasad Mitra, from I.M.S. (T.C.); and Jeremiah O'Neill.

COLONIAL MEDICAL SERVICES.

The following appointments have been made: Dr. B. A. Moss, Dr. L. D. Pringle, and Dr. C. E. Vardy, Medical Officers, Federated Malay States; Dr. J. A. R. Selby, Health Officer, Hong-Kong; Dr. J. Horne, Lady Medical Officer, Nigeria; Dr. M. L. Cowan, Lady Medical Officer, Straits Settlements; Dr. H. G. Calwell and Dr. G. A. Wilson, Medical Officers, Tanganyika Territory; and Dr. A. H. Mowat, Medical Officer, Uganda.

West African Medical Staff: Dr. L. W. Banks and Dr. W. E. S. Merrett, Medical Officers.

NEW BATH HOSPITAL.—On Oct. 28th the Mayor of Bath laid the foundation-stone of the new Royal United Hospital at Coombe Park, Bath, which will cost £100,000. The first portion to be built will provide 100 beds, administrative and service blocks.

ADDRESSES AND ORIGINAL ARTICLES

INDICATIONS FOR TREATMENT IN PULMONARY TUBERCULOSIS.

The Mitchell Lecture delivered before the Royal College of Physicians of London on Nov. 13th

BY L. S. T. BURRELL, M.D. CAMB.,

FELLOW OF THE COLLEGE; PHYSICIAN TO THE ROYAL FREE HOSPITAL AND TO THE BROMPTON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST.

IT is usually a simple matter to decide whether a patient has been infected with tuberculosis, but it is often extremely difficult to determine whether or not the lesion is active. Yet on this depends the need for treatment.

The problem commonly comes before the practical physician in one of two ways. In the first he is asked for an opinion as to whether a certain series of symptoms, such as lassitude, wasting, cough, in a patient previously healthy, is due to active tuberculosis. In the second he is asked whether a patient who admittedly has had pulmonary tuberculosis still has active disease requiring further treatment or whether it has become arrested.

Before discussing these questions it seems to me wise to consider briefly the current views on infectivity and immunity. On this subject there is a wide difference of opinion, and consequently there are different views not only as to the nature of treatment but also as to what type of patient requires any treatment at all, either for prevention or cure.

Infection and Immunity.

Tuberculin may be of little value but it has at least brought out the fact that a large proportion of human beings is infected with tuberculosis. Yet only a few develop clinical tuberculosis. Since so many are infected and so few affected it follows that the majority of people keep well without any treatment at all. To submit anyone to a long course of unnecessary treatment is not only useless but may do untold harm. Many a healthy person has been frightened into invalidism by the threat of tuberculosis. Instead of following a normal career, the patient gives up business and devotes his life to health. He develops fads about food and clothing, cannot live in this or that climate, must winter out of England, is in a constant state of anxiety about his health, and is never really happy. Bad as this is for an adult, it may be much worse for a child if taken away from school and companions of a like age at the most impressionable time of life. On the other hand, an active tuberculous lesion is very amenable to treatment in the early stages, but if neglected quickly gets out of control. It is, therefore, of the utmost importance to distinguish between the tuberculous and those who are out of sorts through some other cause. These latter require treatment, but it is usually a matter of adjusting the mode of life, or in the case of children of arranging diet. Doubtful cases should be watched at frequent intervals, but only after the fullest consideration should a patient be diagnosed as tuberculous and sent away for a long course of treatment. It must be remembered that if tuberculosis is lurking in the body, a prolonged sea voyage or holiday will not necessarily prevent the development of clinical pulmonary disease, and in many cases the patient would be better carrying on his usual occupation under medical supervision. Work is healthy, holidays sometimes are not.

Now in the prevention or treatment of early disease much depends on the view taken of immunity conferred by infection. If we believe that a small infection or series of infections protects the individual effectively, then the correct procedure is to treat those who fail to react to tuberculin either by exposing them to infection or inoculating them with tuberculin or an emulsion of attenuated tubercle bacilli. Some have actually protested against the pasteurisation of milk on the grounds that by repeated small infections through the milk the child gradually acquires immunity. The opposite view is that clinical disease cannot occur without infection, and the essence of prevention should be to abolish or dilute as far as possible all sources of infection, so that there may be as little chance as possible for infection or reinfection.

According to the first view it is those who fail to react to tuberculin who are in danger; they are the unvaccinated. According to the second view the reactors are not effectively protected and are in danger from activation of their own lesions as well as of a chance reinfection. These views should be carefully examined, since they vitally affect the policy of the campaign against tuberculosis, as well as our opinion of the indications for treatment in an individual case.

RESISTANCE OF THE INFECTED.

Now, if one takes a broad view, tuberculosis of the infant is quite different in type from that of the adult in most civilised communities. Amongst certain primitive races, or those who have not been brought into contact with tuberculosis, the adult does not acquire resistance, and if infected develops the infantile type of the disease—that is, an acute generalised tuberculosis which proves fatal in a few months or even weeks. A race may be completely free from tuberculosis until the white man comes and introduces it; then follows an acute form which may decimate the population. In their native state monkeys are free from tuberculosis, but in captivity it is a common cause of death. One diseased monkey will infect others in the same cage and the type of disease is that found in infants, acute and rapidly fatal. Experimentally it is known that if living tubercle bacilli are injected into an animal which has not previously been infected there is no immediate reaction and it remains quite well for a time, but later, if the dose is sufficient, it becomes ill and dies of generalised tuberculosis. If tubercle bacilli are injected into an animal which has previously been infected there is an immediate reaction which may be fatal. If it survives, however, recovery may take place without any actual disease developing provided the infecting dose was not too great. If disease does occur it progresses much more slowly and is associated with attempts at healing, as indicated by the formation of fibrous tissue. Infection of a non-immune animal, therefore, produces an acute type of tuberculosis such as occurs in infants and people who have not previously been exposed to the disease. Infection of an immune animal produces an entirely different type of disease which is chronic and, although usually fatal in the end, is associated with serious attempts at healing which are at times successful. This is the type of disease commonly seen in adults in civilised countries.

It will be seen that there is definite experimental

and clinical evidence to suggest that resistance develops from infection. Resistance, in the sense that the addict is resistant to morphia, does undoubtedly occur; but I suggest that this is different from resistance or immunity such as is produced by vaccination against small-pox.

It is true that the usual type of disease in the infant is acute and generalised, but in the great majority of cases the child resists the infection and fixes the disease, not in the lungs with resulting chronic fibroid disease, but in the glands. Unless miliary tuberculosis develops the disease seems to pass through the lungs of the infant without producing any lesion. Children are particularly free from pulmonary tuberculosis until they reach the age of puberty. Then the mortality rises. The rise occurs earlier in girls than in boys and in girls of 16 to 20 years of age the mortality from pulmonary tuberculosis is greater than that from tuberculosis from all causes in the infant. To explain this rapid rise in mortality by assuming that the specific resistance to tuberculosis is lowered by the strain of life that occurs about puberty seems to me to be very unconvincing. No such failure of resistance to other conditions such as measles occurs at that time. Moreover, if one makes a series of tuberculin tests one finds that a positive reaction occurs with increasing frequency from infancy to adult life. There is no falling-off in the number of reactors to tuberculin as puberty and the great increase in the incidence of tuberculosis occur. In the primitive races the incidence and type of the disease does not appear to be in any way dependent on whether they have been tuberculinised or not as shown by the reaction to tuberculin. Different races are affected differently, as in the case of animals; the sheep, for example, is immune but the cow is susceptible. Although half a century has passed since Koch discovered the tubercle bacillus, no recognised method of protection against tuberculosis has been evolved either by tuberculin or emulsion of living bacilli. The reported success of experiments with B C G still awaits confirmation. Griffiths failed to protect monkeys by B C G, and the abolition of tuberculosis as a serious menace to monkeys in captivity in many zoological gardens followed better ventilation, housing conditions, and light—and not the tuberculinisation of the animals.

If infection really protects, it is difficult to see why patients with a mild tuberculous lesion, such as pleural effusion or a small pulmonary lesion which has apparently healed, should be more liable to get a recrudescence of active disease than others. They are not only not protected against clinical tuberculosis but are rendered more liable to get it. Evolution by the survival of the fittest produces wonderful protective powers in the animal body, and a race which has to live in a country where tuberculosis or typhoid or yellow fever is endemic tends to become much more resistant to it than a race where the disease does not occur. The body also develops defensive powers against any poison gradually introduced and one would expect the chronic consumptive to have considerable resistance—as in fact he has. If he has no resistance he dies rapidly before he has time to become a chronic consumptive. True immunity such as occurs after small-pox, scarlet fever, &c., is surely an entirely different thing from the resistance which develops from habit in such cases as alcohol, arsenic, or I venture to suggest, tuberculosis. It is not a question of relative immunity; the two are completely different. In one case the individual having had small-pox is immune and can live in an atmosphere of small-pox. In the other the effect of the poison is modified as the body becomes accustomed to it, but there is no real protection, and death from tuberculosis eventually occurs in the majority of cases.

INFECTION SHOULD BE PREVENTED.

For these reasons I am of opinion that failure to react to tuberculin is not an indication for treatment. An attempt to protect by tuberculin or tubercle bacilli seems to me to be wrong. Clinical tuberculosis develops from a tuberculous lesion. If there is no lesion it cannot develop. The policy that appeals to me is therefore to prevent infection, and if this is impossible, to dilute it as far as possible. In practice it is found that where this has been done by sanitation, cleanliness, and correcting overcrowding, there tuberculosis has decreased. There is no evidence that any success has followed attempts to diminish the incidence of the disease by producing immunity. There is evidence that in certain cases where attenuated tubercle bacilli have been injected to produce immunity clinical and fatal tuberculosis supervened.

The Suspected Early Case.

If the patient reacts to tuberculin it may be assumed that he has been infected. The problem then is to decide whether the symptoms are the result of a tuberculous lesion or whether the lesion is not active and the symptoms are due to some other cause. In the first case, treatment should be directed against the tuberculosis; in the latter the tuberculous lesion, as indicated by the tuberculin test, is accidental and requires no treatment. I shall now consider a number of symptoms which are associated with tuberculosis of the lungs.

SYMPTOMS.

Cough is so commonly present that its absence must be taken as evidence against the diagnosis of pulmonary tuberculosis. In some cases of acute miliary tuberculosis, however, there is no cough. Paroxysmal morning cough accompanied with vomiting is not uncommon in the later but not in the early stages of the disease. It is more frequent in alcoholics with bronchitis. People who smoke too many cigarettes usually have some cough. Cough which suddenly develops and lasts more than a month is suggestive, and of 611 patients admitted to Brompton Hospital with pulmonary tuberculosis it was the first symptom noticed in 44·8 per cent.

Sputum is often absent in the early stages and when it appears it is mostly mucus, and tubercle bacilli are not found. A negative sputum test in the early stage is of little value, but when once the sputum has become purulent failure to find tubercle bacilli is very strong evidence indeed against the disease being active tuberculosis. Kingston Fowler reports 188 cases from Midhurst Sanatorium and in these tubercle bacilli were found in the sputum on the first examination in 167 and on the second in 12 cases. That is to say, that in only 9 out of 188 cases were they not found at the first or second examination.

Fever.—In early active disease there is usually some rise of temperature in the evening. The typical tuberculous temperature is an exaggeration of the normal curve, highest in the evening and lowest in the morning. If the temperature is taken at 6 P.M. and 8 A.M. it will bring out the highest and lowest reading. In tuberculosis, however, it is increased by exercise, so that when investigating a case the temperature should be taken immediately after exercise and subsequently at intervals of 15 minutes in order to note the time it takes to fall. A slight evening rise of temperature alone is not enough for a positive diagnosis to be made. It is common in children with

digestive trouble, in toxæmia from other causes, and in women before menstruation.

Night sweats are common in the early stages of the disease, but usually disappear when the patient is put to bed and does not have too many bed-clothes. They are not common in hospital cases. Patients who wake up at night feeling hot will often complain of night sweats, but this is not important. True night sweats as a result of which the night clothes have to be changed are very suggestive of tuberculosis in an acute stage. In a chronic case they indicate an acute exacerbation and are of serious omen.

Debility.—Loss of energy is present in the great majority of cases and it was the first symptom noticed in 9·5 per cent. of 611 cases at Brompton Hospital. It is almost invariably associated with some localising symptom such as cough.

Loss of weight.—In the very early stages loss of weight is often slight. It was the first symptom in only 2·3 per cent. of the 611 Brompton Hospital cases. Persistent loss of weight for no apparent cause is far more likely to be due to some other condition.

Loss of voice is an occasional early symptom and should arouse suspicion if associated with other symptoms. Persistent loss of voice should always lead to a thorough investigation of the chest, including examination with X rays. If tuberculous laryngitis is found it should be assumed that the lungs are also infected.

Dyspnœa.—Shortness of breath is not common in the early stages, except in tuberculous broncho-pneumonia, when it is extreme.

Dyspepsia.—Digestive troubles are occasionally the first symptoms noticed by the patient, but they are usually associated with some more obvious complaint, such as cough.

Hæmoptysis may occur as a result of mitral stenosis, bronchiectasis, fibroma of bronchus, malignant disease, or other causes, and a thorough examination should be made. If, however, no other cause can be found it should always be taken to indicate tuberculosis of the lungs. Large veins may be seen at the back of the throat, but they never cause hæmoptysis. It does not follow that hæmoptysis in tuberculosis is necessarily an indication for treatment of the tuberculosis. It is common in chronic fibroid cases and often no treatment is required except during the actual hæmorrhage. In the great majority of cases, however, especially those who were previously supposed to be healthy, hæmoptysis does indicate active disease requiring treatment.

Pleurisy.—Idiopathic pleurisy is almost invariably tuberculous. It occurs in many local conditions, such as neoplasm, bronchiectasis, or abscess of lung, and it is always present in pneumonia. In chronic wasting diseases there is often pleurisy, and pleural effusion is common in cases of renal disease or heart failure. If, however, it occurs in the apparently healthy as a result of a chill, or sitting in a draught, or for no obvious reason, it should be regarded as of tuberculous origin. If an effusion forms and clear fluid containing an excess of lymphocytes is found a definite diagnosis should be made. It should be borne in mind that pleural effusion develops as a result of tuberculosis of the lungs. We know, therefore, that the lungs are already affected. With treatment, or in some cases without treatment, the pulmonary lesion may heal, but in some 40 per cent. of the cases it goes on to a definite form of clinical pulmonary tuberculosis which can be detected by physical signs and symptoms.

PHYSICAL SIGNS.

In some schools nowadays it is the custom to belittle the value of physical signs. Let us try to estimate their value fairly. In the first place it must be admitted that one often sees a patient who has been examined by several experienced physicians, but in whom no physical signs are found, yet in whose lungs there is tuberculosis as indicated by the presence of tubercle bacilli in the sputum, the evidence of X rays, and the subsequent development of physical signs. It is evident, therefore, that it is quite unjustifiable to say that a patient has not got tuberculosis of the lungs because he has been examined by one or even several physicians with special experience of chest work, and no physical signs have been detected. Again, physical signs are often misleading. A little dullness at one apex may be due to scoliosis, old pleurisy, or muscular development; it cannot reasonably be taken as an indication of early tuberculous disease of the lung. By the time any impairment of the percussion note is obtained, the disease has progressed far beyond the stage in which it should have been detected by symptoms or radiographic examination. It does happen sometimes, though very rarely, that on examination of an apparently healthy person definite signs are found. In this case there is usually good resistance and fibrosis is taking place. None the less, because it does occasionally reveal the presence of unsuspected disease, physical examination of so-called contacts is important. The point I wish to emphasise is that if no physical signs are found, it is no evidence whatever that the patient is free from tuberculosis. On the other hand, physical signs are important, not only because they are very occasionally the first indication of disease but because they frequently enable one to judge the spread of it. Of all physical signs the only one that is really important is the presence of moist sounds over the upper part of the lung; if these sounds are constant and increase with cough they are almost pathognomonic of tuberculosis. Other signs, such as slight flattening at one apex, impairment of percussion note, altered vocal fremitus, are not only useless in the majority of cases, but they may be actually misleading and dangerous. One is often presented with a case of hæmoptysis and sputum containing tubercle bacilli in which one finds slight impairment of note at the left apex, with diminution of movement and weakened breath sounds; and yet X rays shows the left apex to be clear, whereas there is a definite lesion at the right root and the subsequent course of the disease brings out physical signs at the right root whilst the left apex remains perfectly free. I say, therefore, examine your patient carefully but put not your faith in physical signs.

EXAMINATION WITH X RAYS.

The correct interpretation of radiographic findings is a matter of great difficulty, and it is always wise to have the collaboration of an experienced radiologist. Fine mottling of the lung, especially if seen below and just external to the midline of the clavicle, is strong evidence in favour of tuberculosis. If there is doubt a series of X ray examinations at intervals of three months should be made, and any increase in the shadows will confirm the suspicion and enable one to make a diagnosis. Shadows round the root of the lung, even if dense and exaggerated, should not lead one to a diagnosis of tuberculosis. The hilum of the lung is made up of blood and lymph vessels, bronchial tubes, and glands, and often a dense X ray shadow is seen in a patient who is found post mortem to be free of any disease in that region. Tuberculosis

starts in the lung and spreads from there; it does not start in the glands at the root and spread into the lung.

SPECIAL TESTS.

There are many special tests but none is of value except in a negative sense. I have already referred to the tuberculin test, and I shall say no more except that a negative test is evidence that the patient is not infected with tuberculosis, except under certain conditions. If the patient is moribund or seriously ill with tuberculosis the test may be negative. In two adults with typhoid fever I found the tuberculin test negative, and other illnesses have the same effect, but in a doubtful case of tuberculosis a negative tuberculin test is an indication that the patient is free from that disease. The test, however, is of little practical value, because in a civilised country the great majority of people give a positive reaction, whether or not they have or will subsequently develop clinical tuberculosis.

The opsonic index and complement-fixation tests have been tried extensively but have been found wanting and consequently have been discarded by most workers. The sedimentation test is of little value for diagnosis, although very useful as a help to the progress of the disease and to assist in treatment. For example, after the induction of an artificial pneumothorax, if the toxæmia is relieved, the sedimentation rate will fall and one is helped in judging the result of treatment by this test. A quick sedimentation rate occurs in other diseases besides tuberculosis, and in an early case of tuberculosis before toxæmia has developed the sedimentation rate may be normal.

The same applies to vital capacity, except that a normal vital capacity is very rare in pulmonary tuberculosis even in the early stages. It is useful for following the progress of the disease and for assisting in treatment, but it is lowered by many other diseases besides tuberculosis, and is of little value in diagnosis.

INDICATIONS FOR TREATMENT.

In the absence of definite evidence that the symptoms are due to tuberculosis, the patient should be kept under observation and not treated as a consumptive. If there is definite evidence, thorough treatment should be started at once. The slighter the amount of disease the more urgent is the need for treatment, because the patient then has a chance, and with proper care, a very good chance of complete recovery. There is a world of difference between being well and being patched up. A patient will often say he is not bad enough to go into a sanatorium, but the physician should remember that this is a fallacy and that the main function of a sanatorium is to restore to complete health those who have not yet passed into the incurable stage of the disease.

It is therefore of the utmost importance to decide whether a patient is suffering from tuberculosis which is progressing and in need of treatment, or whether the symptoms are due to some other cause, and tuberculosis, if present, is already healed. To sum up my remarks about physical signs and symptoms:—

1. Hæmoptysis of unknown origin should be taken to indicate pulmonary tuberculosis.
2. Pleural effusion is the result and not the cause of pulmonary tuberculosis, unless it is due to some other definite condition such as neoplasm or heart failure. After recovery from the effusion the patient should always be treated as an early and active case of tuberculosis of lung.
3. X rays are by far the most important method of examination and a definite diagnosis can often be made by this means alone. It is however essential to interpret the radiographic findings correctly and to avoid the many errors, the most common of which is to mistake heavy root shadows for disease of the lung.
4. Physical signs are misleading, but the presence of constant moist sounds over the upper part of the chest may for all practical purposes be taken as definite evidence of tuberculosis.
5. The presence of tubercle bacilli in the sputum is conclusive.

Of the signs and symptoms no one is sufficient for a diagnosis to be made, but in combination they may lead to a suspicion so strong that a positive diagnosis is justified. For example, a patient develops a cough which persists for a few months, he also feels easily tired and slack, and is found to have a slight rise of evening temperature, and this rise is exaggerated by exercise. Even if the X rays show what appears to be normal lungs and there are no physical signs such a patient should be put to bed and treated as a case of early but active tuberculosis.

The Chronic Case.

So far I have reviewed the indications for treatment in patients who are probably infected with tuberculosis but who have never had the disease as it is known clinically. I shall now consider the indications for treatment in the chronic fibroid type of case.

In all active cases when there is fever or signs of spreading disease the need for treatment is obvious. When fibrosis has occurred the patient wants to return to his usual occupation and recreations and wishes to know what treatment, if any, is required to prevent a relapse. It should be remembered that there is always need for treatment in the sense that the patient should lead a quiet, regular life, avoiding excess of all kinds. Strain and excess tend to shorten the life of anyone, but in the case of the consumptive there is the additional danger that they will cause a relapse of the disability. Sedentary work in an office is better than a strenuous life in the open air. Fresh air is good for everyone, including the consumptive, and it is especially desirable in his case because if he gets below par he is more liable to a serious breakdown that is the ordinary man. Unnecessary exposure to cold may do harm, especially to the elderly. Let us say therefore that for the fibroid-arrested case there is always need for treatment, but the only treatment required is for the patient to lead a wise, restful life. Apart from this, treatment is required only if the disease again becomes active. The indications of reactivity are the appearance of certain symptoms and physical signs.

Loss of weight.—During sanatorium life patients are apt to put on too much fat and they usually lose some of this when they return to their occupation. This is not important, but a steady loss of weight below the normal is an indication for treatment.

Loss of energy.—If the patient feels overtired after his day's work, and especially if the tiredness increases, treatment is necessary.

Evening rise of temperature suggests that there is some active disease, but other causes of pyrexia should be investigated.

Return of cough and sputum indicate the necessity for treatment, at least until they have disappeared again.

Hæmoptysis should be treated, but it does occur repeatedly in some chronic cases without doing any apparent harm and they can continue at work between the attacks.

Pleurisy is not infrequent, but here again the patient is often well after the attacks and does not require prolonged treatment.

The patient should be examined periodically, and an increase in the physical signs, and especially an

increase in the lesion as seen by X rays, shows that the disease is spreading and treatment is required. Finally, it should be remembered that an idle life is not a healthy one and that many a patient will live longer if he thinks less of his own health and settles down to some suitable occupation.

THE INTERRELATION OF NEUROSYPHILIS AND CARDIOVASCULAR SYPHILIS

BASED ON THE STUDY OF FIFTY CASES.

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THE association of neurosyphilis with syphilis of the cardiovascular system from time to time has attracted the attention of a number of observers. Most of the literature of the subject has emanated from German sources and a perusal of these records indicates that evidence of syphilis of the cardiovascular system has been found clinically in over 30 per cent. of cases of neurosyphilis, while post-mortem signs have been obtained in over 50 per cent. Also, there is evidence to suggest that the clinical diagnosis of neurosyphilis is usually made in the fourth decade of life, whereas cardiovascular syphilis in the majority of cases is recognised only in the fifth decade. In several years' experience of the malarial treatment of early general paralysis it has occurred that some cases, showing no definite clinical evidence of cardiovascular disease, have died suddenly during the pyrexial course. At autopsy in these cases, aortitis and myocardial disease has invariably been found. The experience of Lowenberg,[1] of Hamburg, has been similar; he reported, in 1924, that since the introduction of malarial therapy 20 of his cases had died during the course of treatment, and in the majority an aortitis had been found at autopsy. Gerstmann[2] and Rudolf[3] also mention several such deaths during or following malarial therapy. As it is essential to appreciate the condition of the cardiovascular system in cases of neurosyphilis before undertaking the risk of malarial therapy, and in view of the foregoing observations, it occurred to us to ascertain: (1) if it were possible in cases of neurosyphilis to detect cardiovascular syphilis, by the application of special cardiological methods, at an earlier stage than that at which the more definite physical signs appeared; (2) if evidence could be obtained as to the early signs of syphilitic aortitis; and (3) if cardiovascular syphilis, as revealed by such clinical methods, was more frequent in neurosyphilis than was generally supposed.

Our investigation, therefore, has been essentially clinical and has been approached both from the neurological and the cardiological aspects. Thus, in 25 cases of neurosyphilis attending the West End Hospital for Nervous Diseases solely on account of their neurological symptoms, we have made a complete examination of the cardiovascular system by clinical, orthodiagraphic, and electrocardiographic methods. We have compared this group of cases with a further series of 25 cases of cardiovascular syphilis referred to the National Heart Hospital purely for their cardiac condition. In these cases we have carried out similar investigations, together with a detailed clinical examination of the nervous system.

The details of the two series of cases are given in the Tables.

TABLE I.

Twenty-five Cases of Neurosyphilis.

Tabes and taboparesis	..	20	..	Male	17	..	Female 4
General paralysis	..	5	..	„	4	..	„ 0
					21		4

Average age, 43 years.

Average interval since primary infection in 14 known cases, 21·5 years.

Main Symptoms.

Tabes and taboparesis.			General paralysis.	
Unsteady gait	.. ..	12	Nervousness and loss of power concentration	.. 4
Precipitant and difficult micturition	.. ..	4	Failure of memory	.. 1
Failing vision	.. ..	2		
Gastric crises	.. ..	1		
"Lightning" pains	..	1		
		20		5

Symptoms referable to cardiovascular system, nil.

Cardiovascular syphilis: Definite evidence; suggestive evidence, 1 case each.

The Wassermann reaction was positive in the cerebro-spinal fluid or blood, or in both, in all the cases.

TABLE II.

Twenty-five Cases of Cardiovascular Syphilis.

Syphilitic aortitis with aortic incompetence	.. ..	23	..	Male	17	..	Female 6
Syphilitic aneurysm	..	2	..	„	1	..	„ 1
					18		7

Average age, 47 years.

Average interval since primary infection in known cases, 20 years.

Main Symptoms.

Shortness of breath on exertion, 15

Retrosternal pain on exertion, 10

Symptoms referable to central nervous system, nil.

Neurosyphilis: Definite evidence in four cases; typical tabes dorsalis; pupillary changes only, two each.

The Wassermann reaction was positive in the blood in the 25 cases.

Description of Cases.

(*a*) *Neurosyphilitic series.*—Of the 25 cases of neurosyphilis investigated, seven showed some degree of variation from the normal in the cardiovascular system. Of these seven, one patient exhibited definite evidence of cardiovascular syphilis—viz., a woman with tabes dorsalis, aged 38 years. Clinically there was no cardiac enlargement; the aortic second sound was distinct; and basal diastolic murmurs, retrosternal and conducted to the apex, were present in the aortic area. Blood pressure 130/90. X ray examination showed slight enlargement of the heart to the left and fullness to the right in the first part of the aorta. Electrocardiograph: Low voltage curve with subphysiological T wave in all leads.

One case showed evidence suggestive of syphilitic cardiovascular disease—a woman, aged 35, with taboparesis. Clinically, there was slight cardiac enlargement and accentuated aortic second sound. Blood pressure 135/90. X ray: Slight enlargement of the heart to left, horizontal type; aorta shows slight fullness to the right, especially in the first part. Electrocardiograph: Subphysiological type of curve. A further case, a man aged 42 with tabes

dorsalis, showed transposition of viscera with clinical, X ray, and electrocardiographic pictures characteristic of dextrocardia. Two cases, both men, aged 47 and 49 respectively, showed evidence of hypertension with slight cardiac enlargement and, on X ray examination, fullness of the aortic shadow. Two further men with tabes dorsalis, aged 53 and 56 respectively, showed evidence of arterio-sclerosis and atheroma of the aorta with probable previous hypertension.

(*b*) *Cardiovascular series.*—Of the 25 cases of cardiovascular syphilis examined, four showed clinical evidence of neurosyphilis. All four had typical Argyll-Robertson pupils, and two of these, in addition, showed classical signs of tabes dorsalis—absent knee- and ankle-jerks, impairment of deep sensation, and some degree of incoördination. In all four cases the neurosyphilis was associated with syphilitic aortitis and aortic incompetence.

SPECIAL INVESTIGATIONS.

(1) *Clinical.*—Of the early clinical signs of syphilitic aortitis, a basal aortic systolic murmur and an accentuated aortic second sound are considered to be the most characteristic. In the 25 neurosyphilitic cases no basal systolic murmur was heard. An accentuated aortic second sound was appreciated in two cases only, one being the case described as probable early syphilitic cardiovascular disease and the other suffering from hypertension.

In the cardiovascular group, 23 cases showed a definite basal to-and-fro systolic-diastolic murmur, and in two cases of anuerysm, a basal systolic murmur and a ringing aortic second sound were present.

(2) *Radiographic examination.*—The characteristic signs of syphilitic aortitis are: Evidence of slight cardiac enlargement to the left, increase of the aortic shadow to the right in its first part, especially if the heart is not enlarged; and evidence of uniform dilatation of the aortic shadow or of aneurysm. Of the 25 cases of neurosyphilis, in one there was evidence of increase of the aortic shadow to the right and absence of cardiac enlargement—the case diagnosed as syphilitic aortitis. One case showed fullness of the aorta in its first part, associated with slight cardiac enlargement—the case suggesting early syphilitic aortitis. In three of four cases with hypertension there was slight cardiac enlargement and diffuse fullness of the aortic shadow. One case showed dextrocardia.

In the radiographic examination of the cardiovascular series, there was evidence of cardiac enlargement in all, and of definite fullness of the first part of the aorta to the right in 20 of the 25 cases.

(3) *Electrocardiograph.*—Observations were made on evidence of auricular fibrillation, on the P–R interval for prolongation of the auriculo-ventricular conduction time, widening and notching of the Q R S complex—suggesting some degree of intraventricular block, on variation in the S–T interval, and in the shape and relative size of the T wave in any or all of the three leads.

In the series of neurosyphilitic cases, there was no evidence of definite alteration in the electrocardiograph records. In eight cases the waves were definitely subphysiological in type, with flattening of the T wave in all leads. In the present state of our knowledge the exact significance of this is obscure. In the case of dextrocardia, there was a characteristic inversion of P–Q and T in lead I. In the cardiovascular series of cases, electrocardiographic abnormalities were frequent. Prolongation of P–R occurred in none, prolongation of Q R S in five cases, in three of which there was definite notching with evidence of right branch bundle block. Definite left-sided preponderance was present in ten cases, T_1 physiological in five, flat in 17, and definitely inverted in 3 (all of whom complained of retrosternal pain). T_2, T_3 inversion occurred in one case.

Early Diagnosis of Cardiovascular Syphilis.

Neurosyphilis usually manifests itself at an earlier age than syphilitic aortitis. There is, indeed, evidence to suggest that in the majority of cases the clinical diagnosis of neurosyphilis is made in the fourth decade of life, whereas cardiovascular syphilis is usually recognised only in the fifth decade. This observation was emphasised by Kessler,[4] in 1924, in a pathological study of 59 cases of tabes dorsalis, of which 39 exhibited signs of cardiovascular syphilis. Those cases under 40 years of age, however, showed no evidence of luetic changes in the aorta. Bauer [5] has reported the case of a woman aged 42, under treatment for tabes, who after two years presented definite clinical signs of aortitis. This contention is also borne out by our own series of cases, the average age of the neurosyphilitic group being 43 years, while that of the cardiovascular syphilitic group was 47. Further, Stokes [6] has pointed out how rarely cardiovascular syphilis is recognised in the first decade following infection, and that in his own series of cases 45 per cent. were diagnosed in the second decade after the initial infection with syphilis. Consequently, we felt that by a complete cardiological examination of neurosyphilitic cases, some evidence might be obtained as to the early signs of syphilitic aortitis.

Subjective symptoms cannot be relied upon to suggest an examination for the presence of cardiovascular syphilis. In cases of neurosyphilis with aortitis, our experience has been that the patients seldom complain of any symptoms referable to the cardiovascular system. Also in Frisch's series,[7] of nine cases showing clinical evidence of cardiovascular syphilis, only two complained of such symptoms—retrosternal pressure. It may also be noted that those cases of our cardiovascular series exhibiting signs of neurosyphilis had no symptoms referable to their neurological condition.

On clinical examination of cases of neurosyphilis, an accentuated aortic second sound, especially if accompanied by borderline enlargement of the heart to the left, may be taken as suspicious of early aortitis. The suspicion becomes a probability if radiographic examination confirms even slight cardiac enlargement and shows fullness of the aortic shadow to the right in its first part. The latter condition was present in two of our cases of neurosyphilis, and on this finding alone we should hesitate to advise malarial therapy. The development of a basal systolic murmur is further evidence, and if, in addition, a soft basal diastolic bruit appears, the diagnosis of syphilitic aortitis is conclusive.

In cases of syphilitic cardiovascular disease that have been studied with the electrocardiograph, one of the most important alterations in the curve has been that of the T wave. Willius,[8] in 99 cases of cardiovascular syphilis, found an abnormal T wave in 23, an abnormal Q R S in 22, significant T wave negativity in 17, and arborisation block in 9 cases. Pardee and Juster [9] found that of 50 cases with syphilitic aortitis, of which about two-thirds had aortitic incompetence, the electrocardiograph showed an abnormal T wave in 85 per cent. of the cases;

inversion of T_1 occurred in 26 per cent.; in 20 per cent. it was of the "coronary" type; and in 38 per cent. of those cases without evidence of valvular lesion T_1 was abnormal. Significant abnormalities in the Q R S complex were found in 40 per cent. of the cases. In the series, ten autopsies were obtained, and from a study of the pathological material and the electrocardiographic records, it appeared that the abnormality of the T wave was probably due to encroachment upon the lumen of the coronary orifices by the syphilitic disease in the sinuses of Valsalva. Pardee and Juster conclude that the greater frequency of the T wave changes in patients with aortic incompetence is due to the fact that in these patients the aortitis involves the region of the valves near which the coronary arteries originate.

The only electrocardiographic change we have to record in the series of 25 neurosyphilitic cases examined is flattening of the T wave in all leads, and in the present state of our knowledge the exact significance of this is obscure. Alterations in T_1 were noted in 20 of the series of 25 cases of cardiovascular syphilis.

Association of Neurosyphilis with Cardiovascular Syphilis.

(1) *Pathological evidence.*—In 1923, F. Frisch [7] published a series of 115 cases of neurosyphilis from Wagner-Jauregg's clinic in Vienna in which 45 cases (39·1 per cent.) showed pathological evidence of syphilitic aortitis. Kressler,[4] in 1924, reported the results of a pathological study of 59 cases of tabes dorsalis of which 39 (66·1 per cent.) showed signs of syphilitic mesaortitis. In the same year (1924) Lowenberg,[1] of Hamburg, found that in 341 cases of general paralysis, 33 per cent. showed evidence of aortitis at autopsy. From these figures it would appear that, whether clinical evidence be present or not, an average of over 45 per cent. of cases of neurosyphilis also suffer from cardiovascular syphilis.

(2) *Clinical evidence.*—In 1907, Rogge and Müller [10] of Breslau, recorded a series of 22 consecutive cases of tabes dorsalis of which eight (36·3 per cent.) showed definite clinical evidence of syphilitic cardiovascular disease. In six of these eight cases aortic incompetence was present. The average age of the patients was 43·5 years. Denke,[11] in 1913, reported 153 cases of syphilitic aortitis, of which 63 (41·1 per cent.) showed physical signs of neurosyphilis; of these 63 cases, 12 showed definite signs of tabes, and 17 characteristic pupillary changes. In Frisch's series [7] of 115 cases, nine only (7·5 per cent.) showed clinical evidence of syphilitic aortitis or aneurysm—in contrast to the 39·1 per cent. showing pathological changes in the aorta at autopsy. Forty-five of the 115 patients were suffering from tabes dorsalis, and of these six (13·3 per cent.) showed clinical evidence of syphilitic aortitis. It is interesting to note that of the whole series, two alone complained of subjective symptoms—retrosternal pressure—referable to the cardiovascular system. From these figures, it is concluded that an average of 20 per cent. of neurosyphilitics are expected to show clinical evidence of cardiovascular syphilis.

(3) *Commentary.*—A consideration of our own series of cases suggests the conclusion that in this country at the present time clinical manifestations of cardiovascular syphilis are less frequent in cases of neurosyphilis than the above figures—nearly all from German sources—would indicate. In spite of the application of special methods, only 4 per cent. of our cases of neurosyphilis showed definite evidence, and an additional 4 per cent. suggestive evidence of syphilitic aortitis, even at an average age when syphilitic cardiovascular disease is frequently recognisable. Of the cases of cardiovascular syphilis, 16 per cent. showed signs of neurosyphilis; this also is in marked contrast to Denke's figure of 41 per cent.

Our acknowledgements are due to Dr. Strickland Goodall for kindly allowing us to investigate cases under his care at the National Heart Hospital.

Summary and Conclusions.

1. A series of 25 of the younger cases of neurosyphilis, attending a hospital for diseases of the nervous system on account of neurological symptoms, were fully investigated from both the cardiovascular and neurological aspects.

2. In a series of 25 cases of cardiovascular syphilis of a comparable age, attending a hospital for diseases of the heart on account of cardiac symptoms, similar observations were made on the nervous and cardiovascular systems.

3. Of the 25 cases of neurosyphilis, one case only showed definite clinical evidence of syphilitic aortitis, and in another case there existed signs suggesting this condition. Four cases showed signs of arteriosclerosis and hypertension.

4. Of 25 cases of cardiovascular syphilis, four showed evidence of neurosyphilis. Of these, two were suffering from tabes dorsalis and two showed characteristic pupillary changes.

5. Radiographic examination revealed the presence of increase in the aortic shadow characteristic of syphilitic aortitis in only two cases in the neurosyphilitic group, while in the series of cases of cardiovascular syphilis all 25 yielded this positive result.

6. With the electrocardiograph, low-voltage curves were found in eight of the cases of neurosyphilis, but no definite abnormalities. Of the 25 cases of cardiovascular syphilis, 20 showed abnormalities; in particular, prolongation of the intraventricular conduction time was noted in five cases, and alteration of T_1 in 20 cases.

7. Even with modern instrumental methods of diagnosis, relatively few cases of neurosyphilis (8 per cent.) showed clinical evidence of cardiovascular syphilis. Similarly, however, relatively few cases of cardiovascular syphilis (16 per cent.) revealed signs of neurosyphilis. This is in contrast to figures from German clinics.

8. Early signs suggesting a diagnosis of syphilitic aortitis are: (1) Accentuation of the aortic second sound; (2) on X ray examination, enlargement to the left and slight fullness, especially to the right, of the first part of the aorta; and (3) in the electrocardiogram, abnormalities such as widening of the Q R S complex and flattening or inversion of the T wave, especially in the first lead.

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APPENDICITIS IN THE SCHOOLBOY.*

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It has long been recognised that it is advantageous to consider diseases at different age-periods. It is for this reason that children's hospitals have been formed all over the world. Certain diseases only occur between the ages of 1 and 12, and between these limits the reaction of the organism to infections and injuries differs from other age-groups. Similarly adolescence, 12 to 21, has its own peculiarities of behaviour, perhaps less sharply marked from childhood but differing considerably from adult life. In boys of school age certain differences present themselves. Acidosis, manifested as it is in childhood in such varied and frequent forms, hardly ever occurs. This is some comfort to us, because attention has been so strongly directed on acidosis, that it is uncommon to find any case of recurrent appendicitis in the child to which the diagnosis has not at some time or other been applied. After the age of 12 this bugbear is a rapidly decreasing one.

The age of adolescence has other compensations. Diseases of the stomach, duodenum, and gall-bladder are so rare that they may be almost disregarded. Malignant disease and the degenerative diseases, such as diverticulitis and visceroptosis, are hardly to be considered. We are left with a few diagnostic stumbling blocks—rare peritoneal infections, referred conditions of the lung and genito-urinary tract, congenital malformations of the intestines, errors of rotation and persistence of embryonic structures—which may show themselves first at any age.

There is only one more difference which has struck me in considering acute abdominal diseases at different ages and that, perhaps, is a psychological one. Boys of school age are on the whole rather secretive as regards their complaints. An attack of appendicitis may occur and may proceed to gangrene and even perforation before a formal complaint is made. I have seen this delay on several occasions and I am unable to decide whether the inflammation is more acute, whether the discomfort is less acute, or whether a misplaced desire for freedom determines this self-imposed heroism. Possibly school traditions play their part in encouraging or discouraging the confessional of the sick room.

One would expect in a modern school, organised from the health point of view, with sick room, nursing staff, and a regular system of reporting, it would be an easy matter to attain the ideal and secure every case of appendicitis with the inflammation limited to the appendix. My experience is that this is by no means always the case. Possibly stoic endurance is sometimes the cause, but it may be that a more fulminating type of case is found in years of adolescence than in any other period.

Acute Appendicitis.

DIAGNOSIS.

In about 90 per cent. of cases the first symptoms are obstructive. The appendix is blocked by a fæcolith, the products of inflammation, or a kink, and writhes spasmodically to empty its contents. At this initial stage the features are central abdominal pain, colicky in nature, accompanied in some cases by vomiting. Sudden obstruction of any hollow viscus, be it small intestine, Meckel's diverticulum, renal pelvis, or ureter, may give rise to very similar features. The only distinguishing sign at this stage may be a slight tenderness on pressure over the right iliac fossa. So long as the infection is confined to the lumen of the appendix no true rigidity of the abdominal muscles is noted. With the extension of the infection to the peritoneal covering of the appendix, tenderness at McBurney's point and localised involuntary rigidity of the muscles covering the right iliac fossa begin to show themselves. This extension of the infection inhibits appendix movements and the central colicky pain ceases. In its place begins persistent pain in the right iliac fossa. If the process continues the infection spreads to the parietal peritoneum and involuntary rigidity gives a guide to its extent. The area involved and the intensity of this rigidity depend on the anatomical position of the appendix. If the appendix is near the anterior abdominal wall, tenderness and rigidity are early manifest and reach the highest degree of development. If the appendix lies in the pelvis, the rigidity is lower in situation and later in development, although the maximum point of tenderness may still be over McBurney's point. If the appendix is retrocæcal, the tenderness and rigidity show themselves in the loin. The pelvic peritoneum is surprisingly tolerant to infection and unproductive of painful stimuli. This explains why a pelvic appendix comes to operation later than any other variety.

Vomiting may or may not occur. The initial pains may be accompanied by vomiting, but it is rarely a pronounced feature, and it nearly always follows the pain and does not precede it. Excessive vomiting always makes one look for some condition other than appendicitis. The temperature is usually raised soon after the beginning of the attack, but it may remain normal throughout, and it rarely reaches a high level. A temperature over 103° would certainly make one consider another diagnosis. The pulse is always raised and is the best indication of the severity of the attack. The pulse-rate varies a good deal in health, and a knowledge of the boy's normal pulse is of great assistance. The bowels are usually mildly constipated, but in the case of a pelvic appendix, an irritable diarrhœa is sometimes an early sign. I have often thought that the description of a typical attack of appendicitis sounds so simple that errors in diagnosis can hardly ever arise. I am aware that variations of symptoms and signs do arise even in straightforward cases, but I believe they are all capable of an explanation if a constant effort is made to correlate the clinical features with the probable pathological conditions present. The real difficulties are met with when the anatomical position is abnormal with a high undescended cæcum, or a left-sided cæcum, or where the inflammation is complicated with some other lesion such as obstruction. I have recently operated on a case where the small intestine had become snared by passing under a Meckel's diverticulum adherent to an inflamed appendix which had perforated, and naturally the signs were most confusing.

DIFFERENTIAL DIAGNOSIS.

Acute lobar pneumonia at its onset sometimes simulates appendicitis. The inflammation beginning deep in the lung near its diaphragmatic surface may produce intense abdominal pain and right-sided rigidity. No respiratory signs at first are manifest,

* Introducing a discussion at a meeting of the Medical Officers of Schools Association on Nov. 7th.

except quickened respirations and perhaps a cough. A high appendix impinging on the diaphragm may be closely mimicked. In the differential diagnosis, stress can be laid on these points. In pneumonia the temperature as a rule is higher, the facies is rather distinctive, the tenderness and rigidity are most marked in the upper right half of the abdomen. Pressure on the left side of the abdomen does not increase the right-sided pain, as it would if peritonitis were present. Moreover, the onset is rather too abrupt for such full development of physical signs, if the appendix was to blame. In the course of a few hours physical signs appear at the right base and the abdominal signs recede. I have observed that such a case of pneumonia is often followed by a basal effusion which may become purulent.

There are some other diseases which the textbooks tell us to take note of in discussing the differential diagnosis. Pyelitis, renal calculus, pneumococcal peritonitis are examples. At the age and in the sex that we are discussing they are not common. Tuberculosis of the abdominal glands sometimes simulates appendicitis with central abdominal pain, tenderness in the right iliac fossa, and a moderate degree of pyrexia. As a rule the attack is so mild and fleeting that operation, except by the overzealous, is not considered. In nearly every case careful palpation will reveal a lump in the typical situation. The short duration and mild character of the attack exclude the possibility of the lump being an appendix abscess.

Inflammation of a Meckel's diverticulum must always be borne in mind. It may simulate appendicitis very closely. The only possible distinguishing features are the more central tenderness and rigidity and a greater degree of small intestine distension than would be expected in appendicitis. I have not found any altered appearance of the umbilicus of much assistance in diagnosis.

Primary pneumococcal peritonitis is rare in boys. Fraser and McCartney believe that the infection is always through the genital tract and only occurs in girls. This has not been my experience. Of 14 cases at Great Ormond-street, nine were in females and five in males. In London, however, it is a rare disease. Diagnosis is difficult. The onset is more insidious than in an appendix peritonitis; there is more distension, less rigidity. The temperature is higher and vomiting is more frequent. The facies is rather distinctive. In pneumococcal peritonitis the patient is often pallid, sometimes cyanosed.

TREATMENT.

The whole surgical opinion of the world is agreed upon one point. If a case of appendicitis is seen within 24 hours of the onset of the attack operation should be undertaken. In the young with whom we are dealing I believe that operation is indicated at any stage that the condition may be recognised. In the adult it may be possible or advisable to treat cases not seen until the third or fourth day on expectant lines, but that is outside our province at the moment. Appendicitis in the boy is far more likely to lead to a progressive peritonitis than a localised abscess, and the sooner the appendix is removed the better. Delay is only permissible when the case is obviously subsiding in every feature. The mortality of early operation is less than 1 per cent. It mounts with every day that elapses. This puts a high premium on early diagnosis but, as I have said before, there will always be some cases that fail to come under skilled supervision as early as they should. In family practice a homely diagnosis and a homely purgative are usually responsible for the delay; in school life perhaps a misplaced reluctance to report sick. It is impossible to overstress the importance of withholding purgatives, but happily this complication of appendicitis is not likely to arise at school.

No preliminary treatment is necessary. Gas and oxygen or open ether are the only permissible anæsthetics. If the case is typical and early, then a muscle-splitting incision in the right iliac fossa is excellent. If the case is late or if an unusual position is suspected, then more room is required and a paramedian incision with displacement outwards of the right rectus makes for safer surgery.

To drain when in doubt is still sound practice, especially in the young. If the infection has passed through the walls of the appendix, shown by a turbid effusion in the neighbourhood, or if there is oozing from the acutely inflamed appendix bed, then a drain for 24 hours can cause no possible harm and will relieve the operator of considerable anxiety. If pus is present, then adequate drainage is essential, and a tube should be placed in both the appendix area and the pelvis. Early removal of the tubes is desirable; only in the circumscribed abscess do they function for more than three days. I believe insufficient drainage is the cause of many of the possible complications—residual abscesses, subphrenic abscess, intestinal obstruction, and empyema.

In the after-treatment rest is all important. Nothing by the mouth except water, no purgatives, morphia in the necessary quantity to soothe the patient and abolish pain, and continuous administration of 10 per cent. glucose solution by the rectum to conserve the strength and diminish thirst. Within 48 hours the worst abdominal assault will be forgotten and the intestine will have recovered its normal functions. In suppurative cases early feeding and purgatives lead to intestinal paralysis, extension of the peritonitis, toxæmia, and exhaustion.

Chronic Appendicitis.

This term in the past has covered a multitude of disorders, but it is in patients of the other sex and more mature years that its abuse has been chiefly noted. The wise surgeon is very careful nowadays before he makes such a diagnosis. At the outset one may make a safe generalisation: chronic pain always limited to the right iliac fossa, with or without chronic tenderness, is hardly ever due to the appendix.

DIAGNOSIS.

Chronic disorder of the appendix shows itself, I believe, in two forms. In the first, the more important, beneficent nature gives us warning of what is in store. The patient suffers from a series of bijou attacks of appendicitis, so evanescent that they escape the opportunity of skilled examination and merely come to us as a history. In an otherwise healthy boy, complaint is made of occasional attacks of umbilical or supraumbilical pain, occurring at rather rare intervals, often brought on by exercise. There is rarely nausea or vomiting. Sometimes there is the admission that the abdomen is sore for a little while after an attack, that an upright stance is uncomfortable, or that flexion of the right thigh causes pain in the right side. If examination can be made at such a time, tenderness on palpation of the appendix area will be noted, and the diagnosis of appendicitis can be made with some confidence. In the absence of such an opportunity, it is wiser to keep the boy under careful observation, and perhaps call in the aid of the radiologist. In this type of case the boy is perfectly well between the attacks.

In the second form, the symptoms are much more indirect. An adherent or obstructed appendix interferes with the proper functioning of the digestive tract, upsets peristalsis, and a form of chronic intestinal indigestion is set up. The boy becomes slack and pasty, and suffers from epigastric flatulence, which occasionally amounts to pain. Corrective measures in the matter of diet and mastication, and regulation of the bowels have no effect. It may be necessary to examine the abdomen many times before any tenderness is found in the appendix region. Even then it is not safe to make a diagnosis of appendicitis without further investigation.

It is in these cases that I have come to rely more and more on X rays. A skiagraph of the abdomen is taken to exclude a calculus, demonstrate any calcified glands, and show the bony skeleton. A barium meal is then given and the general progress of the shadow is followed. Ileal stasis, colon stasis, abnormal position or mobility of the cæcum and ascending colon require notice. As regards the appendix, the examination is of no value if it fails to fill. If it fills, it may be in an unusual position, or it may be fixed. There may be great delay in emptying. More important still, it may be tender on palpation. Any such appearance is suggestive and taken with the clinical picture may make the diagnosis certain. If the appendix fills and discharges in normal time, if it occupies a normal position, is mobile and is not tender, then chronic appendicitis can be excluded.

TREATMENT.

This must be by operation. In the recurrent form of chronic appendicitis I never give the appendix the benefit of any doubt. An acute attack may supervene so swiftly and perhaps at so awkward a moment in the boy's life, that nature's hint must not be disregarded. Removal of the appendix in a quiet period carries practically no mortality; a neglected appendix can cause the greatest anxiety.

IRRADIATION OF THE TRACHEO-BRONCHIAL LYMPHATIC GLANDS IN THE TREATMENT OF CARCINOMA OF THE LUNG.*

BY H. P. NELSON, M.B. CAMB., F.R.C.S. ENG.,
DEMONSTRATOR IN ANATOMY AT ST. BARTHOLOMEW'S HOSPITAL.

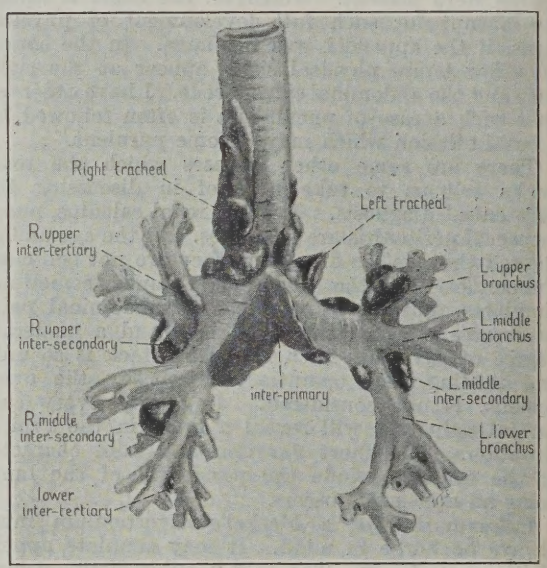
THE methods hitherto employed—lobectomy or the implantation of radon seeds from the external surface—suffer from the limitation that the lymphatic glands draining the neoplasm are left untouched. With the object of bringing the main lymphatic drainage within the scope of treatment I have undertaken some anatomical investigations on the lymphatic glands of the mediastinum and the arrangement of the bronchial tree.

Anatomy of the Bronchial Tree.

As the lymphatic glands are best described in relation to the bronchial tree it will be necessary to review briefly its anatomy (Figs. 1, 2, and 3). The trachea divides into two primary bronchi and from these extend the secondary bronchi to the lobes of the two lungs. Since the two lungs differ in their lobes, the distribution of the secondary bronchi is best appreciated by arranging them in the more symmetrical manner of four secondary bronchi on each side.

On the *right side* the primary bronchus gives off from its right lateral wall a branch to the upper lobe, the upper secondary bronchus, and then continues as the main secondary bronchus, which terminates by dividing into three secondary bronchi; a ventral

FIG. 1.



Dissection of the bronchial tree showing tracheobronchial lymphatic glands (anterior aspect).

branch to the middle lobe, the middle secondary bronchus; a dorsal branch, which leaves the main stem at approximately the same level as the middle bronchus and runs to the posterior part of the lower lobe, the dorsal secondary bronchus; and the continuation of the main stem to the rest of the lower lobe, the lower secondary bronchus.

On the *left side* the primary bronchus is twice as long as on the right. It divides into two main secondary bronchi, upper and lower, which almost immediately break up into two more; thus the four secondary bronchi on the left side all arise within a few millimetres of each other. The upper main bronchus divides into an upper secondary and a middle secondary bronchus, which are equivalent in their area of distribution to the two bronchi of the same name on the opposite side. The lower main bronchus gives off a dorsal branch to the posterior part of the lower lobe, the dorsal secondary bronchus, and then continues to the rest of the lower lobe as the lower secondary bronchus. These secondary bronchi divide into tertiary, then into quaternary, and so on.

Anatomy of the Tracheobronchial Lymphatic Glands.

These glands are fairly constant in position but vary considerably in size. They consist, broadly speaking, of three main groups:—

(*a*) Those in the *mediastinum*: (1) right and left tracheal groups; (2) interprimary groups.
(*b*) Those in the *hila of the lungs*: (3) intersecondary.
(*c*) Those in the *lung fields*: (4) intertertiary, interquaternary, &c.

(1) The *right tracheal group* occupies the right anterolateral aspect of the trachea. The broad lower

* Read before the Medical Society of London on Nov. 10th (see THE LANCET, Nov. 15th, p. 1071).

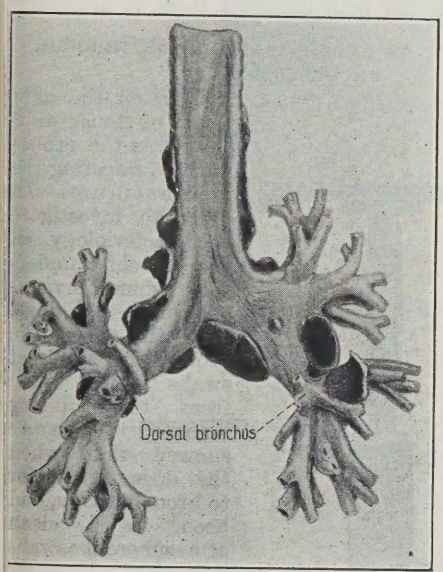
end reaches down to the level of the carina and extends from the mid-line of the trachea on to the upper surface of the right upper bronchus, but as it ascends the group gets narrower and winds backwards on to the lateral aspect of the trachea. Inferiorly is the right pulmonary artery, medially the arch of the aorta, and above this the innominate artery, while on the anterolateral aspect is the superior vena cava and further lateral is the mediastinal pleura.

The *left tracheal group* is by no means so constant as the right. The main part is situated on the lateral aspect of the trachea under the arch of the aorta. From here a chain of flattened glands extends upwards between the aorta and the side of the trachea, while another chain may extend downwards and forwards to lie in front of the left primary bronchus at its commencement and above the left pulmonary artery behind the ascending aorta. The most constant extension of this group is downwards and backwards along the lateral side of the left primary bronchus. These glands lie against the posterior surface of the pulmonary artery, and extend down to meet the left dorsal intersecondary gland.

(2) The *interprimary group* is wedged between the two primary bronchi and extends down on either side as far as the commencement of the lower lobe bronchi. The pulmonary artery is in front of this group and below in the mid-line it is separated by the oblique sinus from the left auricle and, further laterally, the upper two pulmonary veins. Posteriorly are the œsophagus and vena azygos major.

(3) The *right upper intersecondary glands* are wedged between the upper lobe bronchus and the main secondary bronchus, and they are then continued down on the lateral aspect of the main secondary bronchus behind the corresponding branch of the right pulmonary artery to meet the *dorsal intersecondary gland.*

FIG. 2.



Same dissection as Fig. 1, but showing posterior aspect.

The *right middle intersecondary glands* are in the angle between the middle and lower bronchi, in front of the artery, and to the lateral side of the lower pulmonary vein.

The *left middle intersecondary* is also between the middle and lower bronchi and in front of the artery. The *left upper intersecondary glands* are inseparable from the upper intertertiary. This happens because the upper bronchi on each side are short and divide almost immediately into ascending, anterior, and posterior tertiary bronchi.

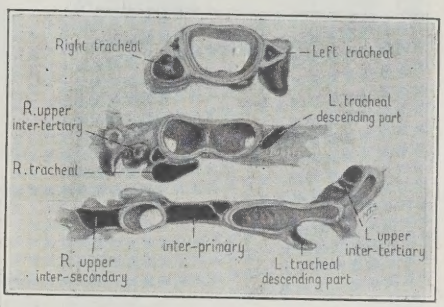
(4) Situated on the anterior surface between these are the *upper intertertiary glands.* The lower, middle, and dorsal intertertiary are further out in the lung fields and are not so constant.

Irradiation.

Since these glands lie in immediate contact with the trachea and bronchi, it occurred to me that radon seeds might be pushed from the inside, through the tracheal and bronchial walls, directly into them.

In order to test if this was anatomically possible, I tried to insert seeds in cadavers, using a special trocar and cannula operating through a bronchoscope. In the first three cases I attempted to insert the seeds into the intersecondary as well as into the interprimary and tracheal glands, but in order to implant the intersecondary an extreme degree of displacement of the trachea and bronchi was necessary—more than would have been practicable in life and especially in carcinoma where the peribronchial or peritracheal infiltration sometimes considerably limits mobility. Moreover, the smallness of these intersecondary glands and their close adhesion to the pulmonary artery make implantation in any case extremely difficult.

FIG. 3.



Three transverse sections of Fig. 1. The upper two are looking downwards and the lowest looking upwards.

I therefore confined my attention to the tracheal and interprimary glands. Starting from the carina the medial wall of the right primary bronchus was inspected and in the alternate spaces between the cartilaginous rings seeds were introduced at points 2 mm. anterior to the junction of the cartilaginous with the membranous portions of the bronchus. The same procedure was adopted in the left primary bronchus. The right tracheal glands were seeded from below upwards, the first seed being introduced just to the right of the mid-line in the first interspace above the carina, and then in alternate spaces until four to six had been introduced. The left tracheal glands may sometimes be very small but when this is so their space is occupied by fat. Three seeds were here introduced on the left anterior and lateral walls of the trachea in the first interspace above the carina. One seed was then introduced on the posterolateral wall of the left primary bronchus below the level of the carina and another into the lateral wall of the trachea above the others (Fig. 4).

In this way I irradiated seven cadavers in all and had only three badly misplaced seeds. Two were loose in the pericardium and one was in the lumen of the œsophagus. This was due, I think, to the introducers used. My first instrument had a tip at an angle to the shaft which was excellent for the tracheal but unsuitable for the interprimary. I now use a straight tip for the interprimary and an angulated tip for the tracheal group.

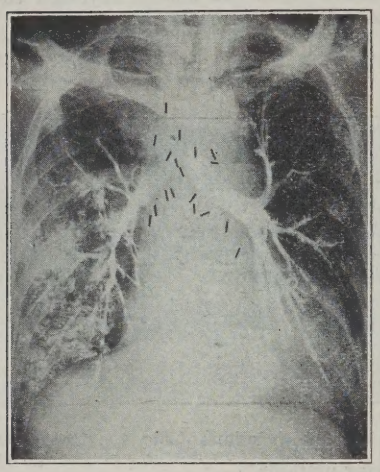
On dissection about 50 per cent. of the seeds were found buried actually in gland substance and the

other half were lying in the fatty tissue round the glands. When the viscera had been fixed in formalin and the glands made firm, the seeds are more likely to enter the glands rather than push them aside and lie in the periglandular tissue.

These experiments convinced me that only the tracheal and interprimary glands could be irradiated with accuracy through the bronchoscope. The intersecondary glands lie beyond the reach of this method and would have to be dealt with from outside through a thoracotomy. These investigations on cadavers have also led me to consider the distribution of gland metastases in carcinoma of the lung. Post-mortem records merely state "metastases in the bronchial glands" and do not mention which of these glands contained microscopic or macroscopic deposits.

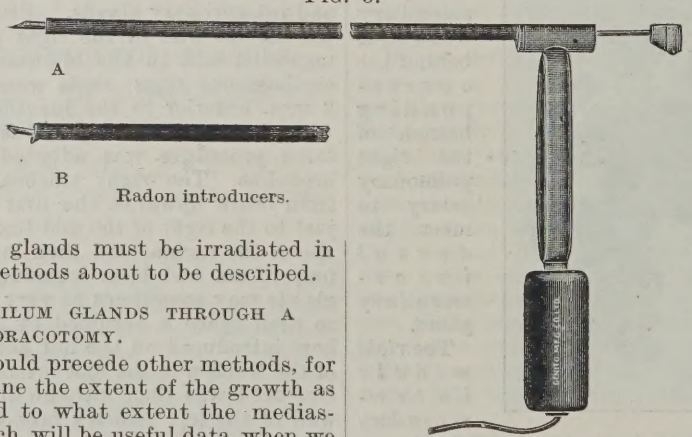
Much more knowledge is required on this problem. In the meanwhile I think that all the accessible glands must be irradiated in accordance with the methods about to be described.

FIG. 4.



Cadaveric experiment showing seeds in the interprimary and tracheal glands. The bronchial tree is injected with barium paste.

FIG. 5.



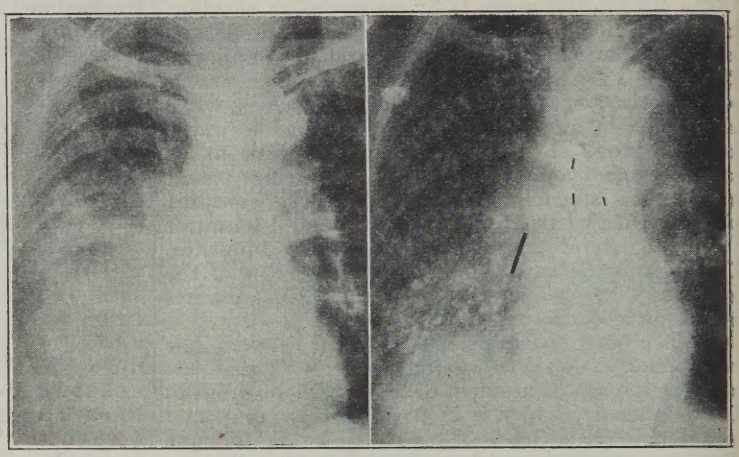
Radon introducers.

IRRADIATION OF HILUM GLANDS THROUGH A THORACOTOMY.

The thoracotomy should precede other methods, for by this we can determine the extent of the growth as against atelectasis, and to what extent the mediastinum is involved which will be useful data when we are irradiating through the bronchoscope. Where possible the lung should be collapsed, the ribs spread to give full exposure, and the exact extent of the intrapulmonary growth determined. On rare occasions lobectomy will be possible, but owing to adhesions and the invasion of the mediastinum the only treatment in the majority will be radon emanation in the form of seeds that do not require subsequent removal.

It is at this stage that the intersecondary glands will have to be irradiated. The right upper and both dorsal intersecondary glands are situated along the posterior surface of the main descending limb of the pulmonary artery while the middle intersecondary are situated just in front of this artery, which is to be found at the bottom of the oblique fissure of the lung. It is desirable (whether practicable I am not yet in a position to say) that at the thoracotomy stage this fissure be split down to the artery, the glands felt for, and irradiated. The intertertiary glands of the affected lobe will also be irradiated through the thoracotomy but in conjunction with the main mass of growth.

FIG. 6. FIG. 7.



FIGS. 6 and 7 (Case 1).—Anteroposterior radiograms of chest. Fig. 7 shows three seeds and radon needle in position.
(In these and subsequent figures the seeds have been picked out in black so as to show clearly on reproduction.)

IRRADIATION OF MEDIASTINAL GLANDS THROUGH BRONCHOSCOPE.

Having settled the anatomical question the next most obvious difficulty was the probability of infecting the mediastinum. In order to investigate the bacteriology of the bronchi I undertook some investigations on dogs. With the aid of the bronchoscope direct swabs were taken from the primary bronchi. These showed that when the dogs, just prior to bronchoscopy, had been in a clean atmosphere the swabs were sterile. Recently I have been taking swabs from cases of bronchial carcinoma. Five have been taken so far, two from patients with practically no sputum were sterile, while those from patients with sputum grew *Streptococcus salivarius* and occasionally *Micrococcus catarrhalis* but no virulent or pyogenic organisms. Further investigations on the sterility of the tracheobronchial tree are in progress, but the evidence so far is that we can assume that the bronchi are sterile in the absence of the usual signs of infection.

Technique.—In order to prevent hæmorrhage from

the punctures it was decided to employ a diathermic current to coagulate the track through the tracheal or bronchial wall. The instruments are therefore insulated with Bakalite (a boilable insulating material) except for the tip that pierces the bronchial wall. It consists of a cannula containing a blunt-pointed stilet, and when this is pushed home the tip of the stilet is flush with the sharp tip of the cannula. I use two different introducers (Fig. 5): (A) a straight tip with the bevel pointing forwards for the interprimary glands; (B) an angulated tip with the bevel pointing downwards. This is constructed to pierce the anterior tracheal wall where the angle of incidence is very small. The introducers are muzzle loaders and the seed is held in place with vaseline.

Local anæsthesia is quite sufficient. The patients are given potassium bromide grs. 30 one and a half hours before and an injection of morphia gr. ¼, hyoscine gr. 1/150, and atropine gr. 1/100 one hour before. The larynx, trachea, and bronchi are anæsthetised with local applications of cocaine.

The introducers may best be operated down a 9 mm. Jackson's bronchoscope. The seeding should proceed from below upwards in case of slight bleeding obstructing the view. The tip of the loaded introducer is pushed through the desired space between the rings, the stilet pushed home, and then a diathermic current of a few milliampères is switched on for three to five seconds according to the resistance of the patient (previously tested with raw beef). The object is to give as little coagulation as is compatible with hæmostasis.

FIG. 8.

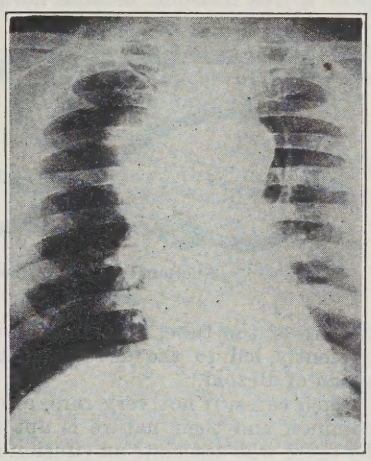
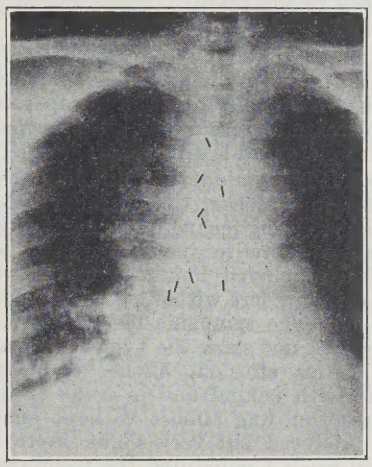


FIG. 9.



FIGS. 8 and 9 (Case 2).—Anteroposterior radiograms of chest. Fig. 9 shows nine seeds in position.

Cases Treated.

CASE I (under Dr. A. E. Gow's† care at St. Bartholomew's Hospital). A male, aged 60, by occupation a valet. Since April, 1930, he had suffered with cough, sputum, occasional hæmoptysis, and pyrexia. Sputum was examined for tubercle bacilli on many occasions but was always negative. When seen in October he had a temperature up to 101° at times, had 90 c.cm. of thick sputum a day, and was extremely emaciated and frail. The physical signs were stony dullness and absent breath sounds at the right base. Wassermann reaction was strongly positive. X ray examination showed an opacity at the right base and the aortic shadow either enlarged or displaced to the left (Fig. 6). Lipiodol failed to enter the right lower lobe.

On Oct. 9th, under local anæsthesia, I made a bronchoscopic examination and could see the right lower bronchus completely blocked with growth. A bronchial swab was taken and a piece of the growth removed with biopsy forceps for microscopy. The swab was sown on blood agar and in blood broth and these grew *Streptococcus salivarius*. The microscopic section was that of a polymorphic-celled carcinoma.

Oct. 16th. *Application of radon down the bronchoscope.* Three seeds of 0·5 mm. platinum screenage and containing 1·5 mc. were introduced, one through the medial walls of the right and left primary bronchi and another through the anterior wall of the trachea just above the carina. A radon needle containing 5 mc. with a large bead attached to one end was then pushed into the growth blocking the right lower bronchus (Fig. 7).

On Oct. 22nd the bead with the needle attached was removed. The growth blocking the lumen had shrunken to three-quarters of its size and pus was welling up from below. A tube was passed beyond the growth and as much pus as possible aspirated. The puncture holes in the tracheal and bronchial walls were looked for but could not be seen.

The patient suffered no pain; the sputum and pyrexia continued, but were no worse than before bronchoscopy, until he died on Nov. 3rd. Post-mortem examination showed a diffuse purulent effusion over the lower two-thirds of the right pleural cavity. In the upper part of the right lower lobe was a breaking-down growth 2 in. in diameter. It surrounded the bronchus and was ulcerated into it. The rest of the lower lobe showed suppurative broncho-pneumonia. Growth could only be seen in the right upper intersecondary glands, but microscopic sections of the others are in preparation. There were no signs of inflammation in the mediastinum. The tracheal and interprimary glands were not adherent to the trachea. The seed intended for the right tracheal glands was lying between the glands and the trachea, but the interprimary ones were intraglandular. No macroscopic changes could be seen round the seeds. There were no secondary deposits elsewhere in the body.

CASE 2 (under Sir Thomas Horder's care at St. Bartholomew's Hospital). A male, aged 63, by occupation a dustman. Since July, 1930, he had complained of giddiness on stooping, cough with occasional blood-stained sputum. Since August he had had pain in chest. When seen at the end of October he was a thick-set, well-nourished man, cyanosed, slight dyspnœa, and some dilated veins in the neck. He was apyrexial and had practically no sputum. There was an impaired note to the right of the sternum, but normal breath sounds in the right upper lobe. The Wassermann reaction was negative. X rays showed a shadow extending upwards and outwards from the right hilum and occupying almost the inner half of the upper and middle lung fields (Fig. 8).

On Oct. 23rd, under local anæsthesia, I made a bronchoscopic examination. The trachea was compressed and growth could be seen projecting into the lumen from the medial wall of the right primary bronchus, while the lateral wall was rigid and could not be displaced sufficiently to view the lateral surface of the bronchial wall.

Oct. 27th. *Application of radon down the bronchoscope.* Nine radon seeds of 0·5 mm. platinum screenage and containing 1·5 mc. were introduced, three through the growth occupying the medial wall of the right primary bronchus, one through the medial wall of the left primary bronchus, four through the right anterolateral wall of the trachea, and one through the left lateral wall of the trachea (Fig. 9).

After the irradiation the man ran an irregular temperature up to 101° for some days, and had sputum amounting to 50–100 c.cm. per day, but no hæmoptysis.

Nov. 5th. *Bronchoscopy.* The growth on the medial wall of the right primary bronchus was larger, occupying half the lumen; this was possibly due to œdema. The puncture holes in the trachea were occupied by small yellow sloughs, while that in the left primary bronchus looked healed. There was some pus in the right bronchus which was removed by aspiration. Since Nov. 5th the temperature and pulse have returned to normal.

These cases show quite clearly that irradiation of the tracheal and interprimary glands can be

† I wish to express my thanks to Dr. Gow and Sir Thomas Horder for their permission to publish this and the following case.

carried out through the trachea and bronchial walls without setting up a mediastinitis. This assertion is made all the more confidently because one of the cases had already a bronchial infection. The cases were too advanced to expect any amelioration of the course of the disease, and no attempt was made to irradiate with a view to curing. Nevertheless, what was done was well tolerated by the patients and showed that the method could be used in the treatment of malignant disease of the lungs.

Given now a moderately early case of bronchial carcinoma where lobectomy or a thorough irradiation is possible, it appears to me that if the tracheo bronchial glands were also irradiated the possibilit of a cure would be enhanced.

The anatomical work was carried out in the Anatom Department at St. Bartholomew's Hospital, and I woul offer my most sincere thanks to Prof. Wollard for hi valuable suggestions. I am also extremely grateful to D G. F. Stebbing, Dr. D. S. Murray, and other members of th staff of the Lambeth Hospital for offering me facilities whic made this work possible. I am also indebted to Mr. Schranz of the Genito-Urinary Manufacturing Company, who mad the instruments required for this work. A part of th expenses of this research was defrayed by a grant from th Medical Research Council.

CLINICAL AND LABORATORY NOTES

SUCTION EXPLORATORY NEEDLE FOR EXUDATION INTO THE TYMPANUM.

By Sir James Dundas-Grant, K.B.E., M.D. Edin., F.R.C.S. Eng.,

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In a case recently under my care an earlier recognition of a serous exudation into the tympanum might have led to treatment from which the patient at once received complete and lasting relief.

The patient was a lady of middle age who had been deaf in one ear for four weeks, the deafness being accompanied by a distressing feeling of fullness in the head. She brought a note to the effect that her medical adviser had employed Politzer's method of inflation and the catheter but without any improvement in the hearing. The tympanic membrane was much indrawn, but did not show the typical appearances indicating serous effusion, having extensive calcareous changes both behind and in front of the malleus. Politzerisation was almost without effect and the catheter produced but very slight improvement. It was only when I punctured the membrane with a suction exploratory needle and drew out a few drops of clear fluid that the nature of the condition was established and relief was obtained. A free incision in the postero-inferior part of the membrane brought about almost complete restoration of hearing.

The suction exploratory needle differs from those previously employed in being attached to a U-shaped glass tube furnished with a piece of indiarubber tubing and glass tip for the explorer's mouth. The interposition of the indiarubber tube for aspiration gives a greater degree of delicacy than a syringe can give even in the most skilful hands. The glass U-tube acts as an efficient handle, and if the proximal limb is shorter than the distal one the view is as little impeded as possible. In addition, the upper portion of the mount of the needle is flattened down (see Figure).

In a case of epithelioma of the right side of the nasopharynx, complete deafness with distressing fullness in the corresponding ear occurred. Relief was immediately afforded for a time by aspiration with this needle, the fluid extracted being clear (serous) and sterile. The condition was one of *hydrops e vacuo* from mechanical occlusion of the Eustachian tube, with absorption of the contained air. The relief was only transitory but was quite appreciable and it was obtained again from time to time on a repetition of the puncture.

Another case was that of a musician for whom was removing nasal polypi in several sittings an whose left ear had almost suddenly got quite dea The membrane was indrawn and showed a greenisl golden sheen. Inflation produced little or no effec but when I withdrew a few drops of clear fluid wit the exploratory needle the hearing improved an after a free incision, became normal. A temporar

Suction exploratory needle.

closure of the tube, inflammatory or traumatic, ha evidently led to the development of the *hydrops vacuo* of Bezold.

Such cases, if not very rare, are certainly not ver common and their nature is apt to be unrecognise by those who associate an effusion into the tympanu with bulging of the membrane, or who look for th typical black line of the level of the fluid, which not present when the cavity is quite full and n visible when the membrane is opaque. A greenisl golden tint with a shiny surface may suggest th presence of an exudation. A myringotome will sett the question at once, but many patients dread th cutting of the membrane and when the diagnosis uncertain the practitioner may hesitate to make th cut. A prick with an exploratory needle is mo readily permitted, and I venture to recommend th one I have described as the most convenient I ha come across.

A lady of a certain age who consulted me o account of what was found to be a serous effusio into the middle ear insisted on being treated witho incision of the membrane. Whether she would ha allowed an exploratory puncture with the needle, do not know. I introduced, however, a Weber-Lie tube through the Eustachian catheter, and by mea of a large ear-syringe inserted into the Weber-Li tube withdrew a few drops of clear fluid. After a fe repetitions of the procedure the hearing returned normal. It is difficult to decide how much of th good result was due to the suction and how much t the dilatation of the Eustachian tube, but probab some to each.

It may be asked why a puncture of the drum ofte

makes such an immediate improvement in cases in which inflation by either Politzer's air-bag or the Eustachian catheter has been unavailing. When the amount of fluid is small and the vacuum not very perfect, the inflation of air may disperse the fluid into the accessory cavities as well as out by the Eustachian tube, but when the tympanum is full "to capacity," such inflation may produce compression without displacement. The negative pressure in these cases must be very high and must exercise its suction action on the walls of the Eustachian canal, drawing them together and increasing the tightness of the occlusion. Puncture of the drum relieves the negative pressure at once and breaks the "vicious circle" if only for the time. Along with the transudation of fluid there is produced a swelling of the mucous membrane and it is obvious that if relief is not quickly afforded the liquid will become inspissated while the mucosal swelling becomes more organised. There are, then, all the elements required for the production of the so-called chronic catarrh of the middle ear.

This condition has, therefore, an importance of its own as compared with acute suppurative inflammation in which, after the rupture of the membrane, the parts often return to their normal condition. The necessity for early detection of the serous effusion or serous catarrh is, therefore, very obvious, and I think we are better armed for this purpose with such an exploratory needle as the one I recommend.

RETROPERITONEAL HÆMORRHAGE.

A REPORT OF TWO CASES.

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Retroperitoneal hæmorrhage, causing symptoms necessitating surgical intervention, is uncommon, and these cases are recorded to illustrate some of the difficulties in diagnosis and treatment.

THE FIRST CASE.

Traumatic Retroperitoneal Hœmorrhage; Duodenal Obstruction.—A man, aged 26, was admitted to hospital on July 18th, 1930. In attempting to stop a runaway horse and cart he was thrown to the ground and run over. On admission he was suffering from a moderate amount of shock. Temperature, 98·4° F. Pulse-rate, 88. There were abrasions over the sacrum and buttocks. No other abnormality was detected. On the following day he complained of a dull abdominal pain to the right of the umbilicus, associated with tenderness and slight rigidity in the right upper quadrant of the abdomen. The pulse and temperature were normal, and a diagnosis of contusion of the abdominal wall was made. The pain diminished with rest, and as there were no symptoms for four days he was allowed up on July 23rd. The next day he complained of a return of the pain, worse after taking food, and he vomited on two occasions. The pulse and temperature remained normal and there were no signs of peritonitis. The symptoms increased in severity and he vomited large quantities of greenish fluid on several occasions. On July 29th a mass was felt to the right of the umbilicus, the size of a small orange. The swelling was fixed and did not move with respiration. It was not in relation with the liver or the right kidney. The physical signs, with the history and symptoms, suggested a retroperitoneal swelling compressing the duodenum.

On July 30th the abdomen was opened by a right paramedian incision. A fluctuating swelling, the size of a tennis ball, was found behind the third part of the duodenum, obviously compressing its lumen. The peritoneum over the swelling was incised and blood-clot was evacuated. The right kidney and the head of the pancreas appeared normal and no bleeding-point was found. A very firm abdominal binder was applied after closure of the abdomen. Convalescence was uneventful and the patient was discharged on August 20th. There has been no return of symptoms.

The salient features of the case are: (*a*) nature of the injury; (*b*) development of the hæmatoma after allowing the patient to resume activity; (*c*) nature of the vomit—greenish fluid gradually increasing in quantity—consisting of stomach and duodenal contents only; (*d*) nature of the pain, aggravated by food and relieved by vomiting; and (*e*) absence of any sign or symptom of intraperitoneal hæmorrhage or peritonitis.

THE SECOND CASE.

Spontaneous Retroperitoneal Hœmorrhage; Cirrhosis of the Liver.—An unmarried woman, aged 36, was admitted to hospital on Oct. 30th, 1928, complaining of general abdominal pain and vomiting of one day's duration. She had suffered from similar "bilious attacks" for about 12 months. They were not sufficiently severe to interfere with her work and had no relation to food. There were no features worthy of note in the personal or family history.

The patient was a thin, pale woman with a lax abdomen, free from tenderness. The lower border of the liver was easily palpable and the kidneys freely movable. Barium meal showed a moderate degree of visceroptosis. Investigation of the renal tract showed no abnormality. The Wassermann reaction was negative. A diagnosis of visceroptosis was made and suitable treatment instituted.

On Nov. 7th she was suddenly seized with severe abdominal pain and vomiting. The abdomen was tender and rigid all over. Temperature was subnormal and the pulse rapid and feeble. The appearances suggested an "acute abdomen," and laparatomy was performed. There was an extensive retroperitoneal hæmorrhage with hæmorrhagic infiltration into the mesentery of the small intestine and the transverse colon. The retroperitoneal veins were greatly dilated. The liver was moderately enlarged, with the characteristic granular surface of cirrhosis. The other abdominal organs were normal. No blood or free fluid was found in the peritoneal cavity. The abdomen was closed. After a slow convalescence the patient was discharged on Dec. 13th. The patient was seen one year later; she was still subject to occasional attacks of abdominal pain and vomiting but there was no change in her general condition. A history of alcoholism was subsequently obtained.

The important features of the case are the absence of definite signs of portal cirrhosis, the unusual site of the hæmorrhage, and the fact that the symptoms simulated those of an acute intra-abdominal lesion.

DISCUSSION.

Osler [1] has pointed out that the most extreme grade of portal cirrhosis may exist without symptoms; so long as the compensatory mechanism is maintained the patient may suffer no inconvenience. The veins of Retzius unite the radicles of the portal branches in the intestine and mesentery with the inferior vena cava and its branches. To this system belong the whole group of retroperitoneal veins which are, in many instances, enormously enlarged, particularly about the kidneys, and carry a considerable proportion of the portal blood. It is probable that in the case reported the hypertrophy of the retroperitoneal veins produced a compensatory mechanism sufficient to account for the latency of the symptoms. Hæmorrhage from mucous surfaces is a common manifestation of portal cirrhosis; the bleeding usually occurs at the site where the stress on the collateral circulation is greatest.

Hæmorrhages in the anterior abdominal wall have been recorded, and Carnot [2] has described hæmorrhages associated with cirrhosis of the liver in the psoas and rectus abdominis muscles, with great enlargement of the para-umbilical veins. It is uncommon for such hæmorrhages to be unassociated with more obvious bleeding and with evidence of a collateral circulation.

As in the case recorded, retroperitoneal hæmorrhage may give rise to symptoms and signs of some grave

intra-abdominal lesion. It is probable that vomiting, abdominal rigidity, meteorism, shock, and so on, are due to interference with the nerve plexuses in the retroperitoneal tissues and in the mesenteries. If the hæmorrhage is extensive it will give rise to symptoms by mechanical obstruction and by the loss of blood. Diagnosis is usually possible only after the abdomen has been opened, and then the hæmorrhage is best left alone, unless it is producing mechanical obstruction, when the clot should be evacuated. The general condition of the patient would probably be such that any of the usual methods of reinforcing the existing collateral circulation in portal cirrhosis (with the possible exception of including the great omentum in the parietal incision) would not be entertained.

Traumatic retroperitoneal hæmorrhage, although rare, is more common than the spontaneous variety, and cases have been recorded by Choquard,[3] Schneider[4] Summers,[5] and Hinton.[6] It usually results from direct trauma, as by blows, falls, or run-over accidents. Compared with the more serious results of such trauma—intraperitoneal hæmorrhage from injury to a solid organ, or peritonitis from rupture of a hollow viscus—retroperitoneal hæmorrhage is rare (2 out of 53 cases discussed by Hinton). The bleeding usually arises from some small retroperitoneal vessel and may be diffuse or localised. Diffuse hæmorrhage gives rise to symptoms described under Case 2. Localised hæmorrhage will form a tumour-like mass which may compress the least mobile parts of the intestine and cause symptoms of intestinal obstruction. Retroperitoneal hæmorrhage due to injuries to the kidney can usually be diagnosed by the physical signs and examination of the urine.

Retroperitoneal inflammation due to injuries to the duodenum or colon gives rise to a cellulitis of great severity, with early rise of temperature and the rapid formation of an emphysematous inflammatory swelling in the loin. Diffuse hæmorrhage is usually diagnosed after the abdomen has been opened for a suspected injury to some intra-abdominal organ. The bleeding-point is usually not found and the cases are best left alone. Localised retroperitoneal hæmatomas should be evacuated by incision, for they usually cause symptoms from pressure on the gut, or at a later date they may give trouble as retroperitoneal or mesenteric "cysts."

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MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE.

SECTIONS OF NEUROLOGY AND OPHTHALMOLOGY.

AT a joint meeting of these Sections, held on Nov. 13th, the chair was taken by Mr. LESLIE PATON, President of the Section of Neurology. Dr. A. LINDAU opened a discussion on

Vascular Tumours of the Brain and Spinal Cord.

These growths, he said, had an importance greater than their numerical occurrence would suggest. Their division by Cushing and Bailey into two groups—angiomatous malformations and hæmangioblastomata—marked a great advance, as the site, histology, signs, and treatment were different in the two groups. The telangiectases, which might be found deep in the brain stem, were rare and unimportant. Venous and arteriovenous malformations were usually in the cerebrum, but might be found lower in the brain or in the cord. They consisted of numerous wide blood-vessels with intervening glious tissue. Angiomatous malformations always showed these traces of compressed nervous tissue between the vascular loops, and were associated with a systemic disorder characterised by trigeminal nævi, homolateral pial angioma showing calcification when examined by X rays, and a unilateral buphthalmus or glaucoma. The syndrome often occurred in young children but a family history was only occasionally found. In France the condition was known as "syndrome névrocutané."

Quite different in type was the hæmangioblastoma, known in France as "angioréticulome." This was essentially neoplastic, with a characteristic microscopical appearance. It was not rare; Dr. Lindau had met 17 cases. It usually occurred in the cerebellum and sometimes in the medulla or cord, but not in the hemisphere. It might be either compact or cystic, and a cyst often showed a nodule in its wall. Often the colour was yellow. The structure seemed to be that of a nævus, but there was abundant intercapillary tissue, usually rich in pseudo-xanthoma cells. These were due to exudation of lymphocytes containing lipoids and their ingestion by the phagocytic endothelial cells. The characteristic foam cells were due to lymph stagnation. Nervous tissue—owing to its lack of lymphatic vessels—was unable to get rid of the fluid produced by the tumour and as these hæmangioblastomata were very exudative cyst formation resulted. Hæmangioblastomata in the hind-brain might arise from a vascular anlage in or near the fourth ventricle.

The underlying process at work might give rise to a general capillary angiomatosis of the central nervous system, with vascular tumours in the retina and hind-brain and growths in the pancreas and kidney. This syndrome revealed a family history in 20 per cent. of cases. The growths in the abdominal organs were benign and were only revealed at post mortem. The histological picture was often obscure and the lesion could only be identified in fresh specimens. Perdrau's staining was of great value. Local treatment of the brain condition was likely to be successful, but the possibility of other lesions must always be borne in mind. The relationship between angiogliomata, angioblastic meningiomata and hæmangioblastomata required further research.

SURGICAL TREATMENT.

Sir PERCY SARGENT said that the grouping of vascular tumours into divisions must not be too closely insisted upon. It was hard to tell arterial from venous growths in the brain, and better not to try. The growths belonged to the pia mater and

were usually superficial. X rays might reveal calcified vessels. It was difficult to know how to treat them. Ligature might cause a temporary increase in paretic symptoms and—like ligation of the carotid—gave little benefit. Death usually resulted from hæmorrhage.

In the cord the vessels seemed to be venous; as in the cerebral type, there was a curious matting of the arachnoid. The variability in the symptoms was characteristic; grave attacks might be followed by long periods of intermission with conspicuous improvement. The cerebro-spinal fluid in three of his cases had been golden-yellow and had shown a slight increase of protein. The intermissions made it difficult to estimate the value of treatment. Opening the theca might be beneficial, but the symptoms were not wholly due to mechanical pressure; they were partly caused by circulatory disturbance in the cord. Ligation was harmless but ineffective. He described a curious case of thrombosed aneurysm of an artery of the pia mater, which had caused signs indicating a tumour in the region of the seventh cervical. Laminectomy had caused such profuse hæmorrhage that the operation had had to be abandoned. Autopsy revealed a kind of cirsoid aneurysm involving the cervical muscles, the vertebræ, and the membranes.

Capillary nævoid growths in the pia and choroid came between hæmangiomata and hæmangioblastomata. Cysts constituted 10 per cent. of all intracerebellar tumours. Simple serous cysts were often seen in museums, but it was probable that some of these contained overlooked hæmangioblastomata. Parasitic cysts occurred, and Virchow had described a developmental cyst in connexion with the fourth ventricle; hæmangiomata or gliomata, however, probably accounted for the majority of cysts.

ANGIOMATOUS FORMATIONS IN THE EYE BALL.

Mr. TREACHER COLLINS said that congenital abnormalities were found in the retinal and in the ciliary vessels. Those in the retinal vessels were either angiomata—composed of fully formed vessels—or angioblastomata, composed of the cellular elements of blood-vessels and genuinely neoplastic. In angiomata the vessels were remarkably tortuous and there was often an associated facial nævus and sometimes symptoms of pressure on the cerebrum. Angioblastomata were characterised by a raised mass in the periphery of the fundus to which led a dilated artery and vein. Cerebellar vascular cysts were often present as well. The growth was a mesoblastic neoplasm growing in a neuro-epiblastic structure. Sometimes the endothelial proliferation exceeded the vascular formation and a hæmo-angio-endothelioma resulted. The characteristic appearances were due to the fact that the retinal arteries were end-arteries. The affection was always progressive and ended in blindness. The presence of tortuosity in the retinal vessels might assist the preoperative diagnosis of doubtful cases of cerebral tumour and of recurrent epistaxis.

In the choroid, angiomata occurred in the posterior ciliary vessels. They were usually cavernous and associated with vascular nævi on the face. They were apt to develop a fibrous or osteotic membrane round them; this might be compared with the opaque capsule sometimes seen by X rays round cerebral angiomata. Sometimes the anterior ciliary blood-vessels were involved in facial angiomatous formations, and in this case the canal of Schlemm was obliterated and the iris thickened. This meant obstruction and glaucoma; if the glaucoma occurred early in life the eye became buphthalmic. Cases of this kind were sometimes associated with contralateral epileptic symptoms.

Ocular symptoms might be caused by intracranial hæmangiomatosis apart from any growth in the eye itself; for example, papillœdema from pressure or homonymous hemianopia from involvement of the visual cortex.

Dr. J. G. GREENFIELD said that angiomata were usually congenital and often remained the same size throughout life. They might occasionally become sarcomatous. The term "hæmangioblastoma" postulated a growing tumour, and small tumours which were not liable to grow were better called capillary hæmangiomata. The tumour might lie latent until some trauma caused seepage which led to cyst-formation. He showed specimens and slides illustrating the congenital nature, the family history, and the presence of more than one tumour in the patient.

THE CLINICAL PICTURE.

Dr. GEORGE RIDDOCH discussed the clinical picture of intracranial hæmangioblastoma. The diagnosis, he said, rested on the age and the early intermittent hydrocephalic headache, which occurred early in the morning, often woke the patient up, might be brought on by coughing or sneezing, was sometimes associated with abnormal sensations, and was shooting in character. Characteristically late was the appearance of papillœdema and cerebellar signs: giddiness on movement of the head or staggering. Nystagmus, dysmetria, and hypotonia might not appear until the disease was well advanced. The interval between the onset of headache and the appearance of cerebellar signs was shorter with cystic than with solid tumours, and the course of the cystic syndrome was apt to be rapid once symptoms had appeared. The headache appeared earlier in the solid than in the cystic case. Dr. Riddoch described a case of intracranial hæmangioblastoma in a tram conductor, aged 24, who had had an epileptiform seizure with sensory loss, aphasia, and bilateral papillœdema. Operation had revealed a cyst in the left hemisphere with a small reddish-brown plaque in its wall. After deep X ray therapy the man had returned to work.

Dr. DOROTHY RUSSELL described cases from the pathological museum of the London Hospital. The serpentine angioma or arteriovenous aneurysm occurred in the lepto-meninges and extended to the brain. It had no capsule, and the interstitial tissue was a fine reticulum. A Mallory's preparation showed tongues of glia extending into the tumour, but the greater part was devoid of glia. In one case of capillary hæmangioma there was a well-developed syringomyelia in the cervical enlargement and extending below as far as the tenth dorsal. One case showing multiple telangiectases illustrated a condition which was probably a precursor of cavernous hæmangioma. The cavernous type usually occurred above the tentorium, as a solitary area in which blood-vessels of various sizes were packed closely. There was no anatomical connexion with the meninges; the growth was not cystic and formed a non-encapsulated system of capillary and cavernous spaces, often separated in the outer part by glia and surrounded by gliosis. The walls were made of collagen lined with a single layer of cells and without any trace of muscular or fibrous tissue. The presence of glia was not, however, a good criterion for distinguishing these growths from

the serpentine type. In one case bone trabeculæ were found in the collagen. Endothelial proliferation might be a distinguishing criterion, but some cases had been described in the cerebellum without this proliferation. These had affinity with capillary telangiectases and might be derived from them by organisation of spaces and fusion of walls. Capillary telangiectases were, however, very rare compared with cavernous hæmangiomata, which formed a distinct group. Their relation with Lindau's group was at present doubtful.

Mr. L. BATHE RAWLING described cases that he had seen. In one, headache and fits had been relieved by decompression, but five years later the patient had had an enormous hæmatoma on his right frontal region. This had been cured in time. Possibly decompression prevented a subdural hæmorrhage, but laid the patient open to subcutaneous bursting of the vessels. Another case had had a congenital weakness of the left side, with fits, and a large angioma on the right side of the face. X ray revealed an angiomatous condition with calcified vessels in the right half of the cerebrum and an enormous mass in the occipital region extending deeply into the substance of the brain. Radium treatment had been instituted.

Dr. PARKES WEBER said that the racemose meningeal angioma above the tentorium was usually associated with a port-wine stain on the skin, and asked what cutaneous lesion was associated with Lindau's disease—hæmangio-endotheliomata mostly below the tentorium. He would expect the hæmangio-endothelioma or hæmangio-xanthoma which was common in children. The cysts in the kidney were not those of polycystic disease—which he preferred to call congenital cystic dysplasia of the kidney and liver because the associated condition of the liver was often fibrous rather than cystic.

Dr. HENRY COHEN drew attention to some radiological features. He described a case of a boy of 14 who developed epilepsy and at the age of 25 showed a left hemiparesis with signs of right parietal tumour, but without papillœdema or headache. A bruit heard over the right parietal eminence was synchronous with systole and was obliterated by pressure on the carotid. Radiograms showed a depression in the skull with diploic veins radiating from it. Another patient with a similar bruit had left-sided Jacksonian epilepsy with a large port-wine stain over the whole left side of the body and a port-wine nævus on the left side of his face. He had developed a right hemiparesis at the age of 38. The X ray showed areas of calcification on both sides of the skull.

Dr. W. G. BARNARD showed a unique specimen: a capillary hæmangioma above the tentorium. This resembled Dr. Riddoch's case, and Dr. Barnard thought that the condition was only rare because the interest in it was of recent date.

Dr. LINDAU, in reply, agreed with Dr. Greenfield that trauma must have some importance, but could not agree that the growths were congenital. They could be seen developing in the eye. He could not answer Dr. Parkes Weber's question about the cutaneous lesion, because only two cases had been reported and no histological details had been given. He agreed that the renal cysts in the Lindau syndrome were not of the polycystic type; there would be only 10 to 20 small scattered cysts, while the pancreas would be full of them.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION.

AT a general meeting of this Association held on Nov. 7th, with Dr. G. E. FRIEND (Christ's Hospital) in the chair, a discussion on

Appendicitis, Acute and Chronic, in the Schoolboy

was opened by Mr. L. E. BARRINGTON-WARD, whose remarks appear in full on p. 1116.

Dr. FRIEND said he had understood Mr. Barrington-Ward to say that in acute appendicitis the condition was usually obstructive from the start. He had wondered whether, in the subacute type, there was a pre-obstructive stage which was diagnosable. Of 105 cases diagnosed in his school during recent years 11 were operated upon in the school and 89 at home. Of the school cases, seven showed appendix abscesses, and four acute catarrh which might have quieted down without operation. Of the 89, 78 were diagnosed at school and were watched; symptoms subsided in two or three days, but the tongue remained furred, and there was persistent tenderness in the right iliac fossa; operation at home was advised, and in 77 out of the 78 some abnormality of the appendix was found. In one case the appendix was thickened and a small quantity of pus was found shut up in the lumen, but the boy had shown no signs suggesting abscess after the attack. It appeared that the 78 cases which quieted down could not have been obstructive from the outset. Might there not be an acute catarrhal condition which could be diagnosed if seen early? Boys, unfortunately, did not care to report sickness in the early stages. Statistics for Christ's Hospital since 1889 showed a steady increase in the number of cases of appendicitis diagnosed and a reduction in the number of "disordered stomachs." He thought subacute cases could be diagnosed in the pre-obstructive stage by the facts that the pain was not always localised, and that there was often no vomiting; furred tongue and tenderness on deep pressure over McBurney's point persisted after the attack. His treatment of these cases consisted of rest in bed, and castor oil. The pulse and temperature were taken two-hourly and if there was no improvement he asked for a consultation. If there was improvement he gave a following dose of senna and a light diet. He was aware that opinion was against the use of castor oil, but he had never found it to be harmful.

DISCUSSION.

Sir BRUCE BRUCE-PORTER was of the opinion that attacks of appendicitis always began in childhood and were put down to some error of diet. He had always found enlarged tonsils present in patients with appendicitis and believed the two were connected. Incontinence developing in boys after a bad bilious attack was usually due to an inflamed appendix in contact with the bladder. The sudden onset of dysmenorrhœa in girls might sometimes be traced to a similar irritative effect of a diseased appendix.

Dr. R. A. LEMPRIERE (Haileybury) found an objection to glucose and saline given rectally immediately after operation; the previous constipation made a wash-out desirable before giving glucose, but this was liable to stimulate peristalsis at a time when the incised cæcum required rest. It had not been his experience, moreover, that the pulse was invariably raised, and he quoted the case of a boy at Haileybury who had shown no physical signs until late in the

attack. The difficulty, in his opinion, lay with the mild, slight cases, without rise of temperature or vomiting and with only slight tenderness. In these he advised taking the pulse and temperature every half-hour, and asking for a consultation as soon as there was the slightest rise. He was strongly of the opinion that nothing should be given in the meantime, and in any event never castor oil. If the boy vomited without relief of pain the parents should be warned; even if the case appeared to be mild, operation should be advised, as frequently the condition was found to be more serious than had been anticipated before the abdomen was opened. The expense of the operation was often a heavier burden to parents than surgeons realised. He could only think of two cases in which tonsillitis had preceded the attack. Although cases were now seen comparatively early it was seldom less than 12 hours from the onset that advice was sought; acute cases often appeared to begin during the night.

Dr. S. P. HUGGINS (Wycombe Abbey) said that inflammation of small glands round the cæcum sometimes gave rise to doubtful symptoms; there might be pain and tenderness with a slight rise of temperature, simulating appendicitis. It had recently been suggested that the condition was due to an infected cæcum, but it was only occasionally possible to make the diagnosis without operation. He had used glucose and saline rectally following operation for a long time past. He usually tried to arrange for the bowel to be emptied before operation by means of a wash-out. Where castor oil had been given he always rebuked the mother, but nevertheless it often had the effect of bringing things to a head. A raised pulse-rate was important; he quoted a case where the temperature was at first slightly raised and then averaged normal, while the pulse remained at 90; operation revealed a diseased appendix. In his experience children with acidosis sooner or later developed appendicitis. In doubtful cases where the appendix was found to contain nothing but fæcal material was it possible that it had been removed in a stage preceding the inevitable development of disease?

Dr. W. ATTLEE (Eton) pointed out that no single sign or combination of signs and symptoms gave a reliable indication of appendicitis. It was therefore dangerous to diagnosis any case as catarrhal and to postpone operation. Early operation had everything to recommend it; some normal appendices would certainly be removed, but many would prove unexpectedly to be seriously affected. Tuberculous glands and sometimes enteric might give rise to errors in diagnosis.

Dr. HUGGINS quoted a case where a young girl had acidosis and developed an attack of appendicitis. Operation was postponed for 14 days and then a small abscess was found. Her pulse remained rapid for six months afterwards, which he thought a sufficient contra-indication of delayed operation.

Dr. FRIEND said he had never known an appendix abscess to develop among the cases which he had watched, except in the case already quoted of the boy whose symptoms subsided completely in 24 hours; operation at home was advised, and a small quantity of pus was found encapsulated in the appendix. A competent surgeon had refused operation in the acute stage. He never postponed operation in cases where the diagnosis was certain.

REPLY.

Mr. BARRINGTON-WARD said he regretted the zeal shown for castor oil. It was possible to tell when oil had been given by the speed with which the appendix burst. He had known many cases where it might have been removed clean if castor oil had not been given and provoked rupture. There were probably some cases where secretion in the lumen of the appendix gave rise to peristalsis and pain, associated with furred tongue and slight tenderness. There had been so much abuse of appendix operations in the past that he preferred to wait for more definite symptoms than those. Large tonsils certainly went with appendicitis in many cases. As for glucose, he preferred to give it as a solution and not with saline; it was absorbed readily as a solution and did not tend to increase the patient's thirst. It was useful if an enema could be given before the operation, but if this was not possible a good nurse should have no difficulty in getting the solution absorbed. Four-hourly enemata of 6 to 8 oz. might be given rather than a continuous injection if there was any difficulty. He had not intended to be dogmatic when he said the pulse was always raised; it was an important sign in deciding whether the child was ill or not, but there were certainly some cases in which there was not much rise, usually in children who had normally a slow pulse-rate; it was therefore valuable to know the normal rate. He was interested in the sign described by Dr. Lempriere—namely, the absence of relief of pain after vomiting. He had not previously been aware that inflamed glands round the cæcum could simulate appendicitis, though they were frequently seen at operation. The differential diagnosis from tuberculous glands was always a pitfall, but one which could more often be avoided as experience increased. With paratyphoid confusion often arose, but the temperature was usually unduly high and tenderness was often fleeting. In appendicitis once the symptoms developed they went steadily on without remissions.

HUNTERIAN SOCIETY.

AT a meeting of this Society on Nov. 17th, with Prof. A. W. SHEEN, the President, in the chair, a discussion on the

Place of the Doctor in Industry

was opened by Sir DAVID MILNE-WATSON, Governor of the Gas, Light and Coke Company. After an historical introduction, he pointed out that the question to-day was how the doctor could help industrialists to solve the human problems which they had to face. They were becoming more and more interested in what medical men had to say about making the factory and workshop more hygienic, and the work less fatiguing and monotonous. A very important part of the function of the doctor in industry was to examine the man entering upon employment. In former days a man was engaged without medical examination, and often the work proved to be of a kind to which he should never have been put. The most enlightened firms to-day had every candidate for employment medically examined; this was a great advantage to the man himself and a great saving to the employer. The doctor also undertook periodical examinations of the workmen, but these should not be too frequent. It was clearly the duty of industry to provide light, sanitary workshops, to make the lives of the workers as varied as possible (though this was very difficult in these days of process working), and to do whatever possible to eliminate unnecessary fatigue. Attention must also be given to means of recreation, and his own company also provided baths and ambulance rooms. At the same time it must always be remembered that the most important part

of the life of the workman was lived, not in the factory, but at home. Over the home conditions the industrialist could have little influence, and it was here that the help of the medical profession was most valuable.

Mr. W. A. APPLETON, secretary of the General Federation of Trade Unions, said the doctor's great concern must always be with the individual man or woman, and the first step was the development of a personal relationship with his patient. Modern legislation had affected that relationship, and threatened to affect it more. Formerly the doctor was under obligation only to his own honour and to the sick person; to-day he was also under obligation to the State, which expected from him a considerable amount of clerical and statistical work which irritated him and might even militate against personal study. When to State regulation and bureaucratic direction were added changing expressions of invalidity and so forth, people had indeed cause to be perturbed. They might well wonder whether the practitioner would be able to satisfy administrative requirements, to keep in touch with pathological discovery, to do his duty to the patient, and to pay attention to the interests of the community so far as these were bound up in industry. Modern conditions and demands did indeed seem to be placing a great deal upon the doctor, and, looking at the matter from an outsider's point of view, it did not appear that the doctor could, with credit to himself or profit to his patient, wander so far outside his own particular sphere as he was often expected to do. He might be intellectually interested in the whole scheme of industry, and he must be conversant with conditions leading to ill-health, but he would best promote its efficiency by promoting the health of those employed.

Prof. E. L. COLLIS maintained that the duty of the medical man, on examining those who applied to enter industry, was not like the duty of the medical man examining recruits for the army. In the latter case he had to refuse the unfit, but in the case of industry what he had to do was to find out to what work the unfit could be put. The conditions in industry were so varied that work could be found for the halt and the blind as well as for the physically capable. The first thing that the doctor had to do was to try to provide the industrialist with people fitted for the various kinds of work for which the industry called. Until recently—up to the beginning of the present century at any rate—he had always felt that one of the things which was doing most harm to general health was the condition of life in the factories. Even at that time some attempt was made to teach the child the rules of health, but when that child, having some ideas as to the necessity for cleanliness and so forth in relation to health, left school and went to the factory, he found sanitation then wholly neglected. A great improvement had been made in this respect of recent years, and it was from the factories, when the hygienic work was properly organised, that the great rules of hygiene could be carried into the home. One of the results of the entrance of medicine into industry was the decrease of labour turnover—by which he meant the flitting of worker from factory to factory. A factory employing about 1000 people might well in the course of a year engage 1000 people to keep its staff at the same level—that is to say, while a number of workers in the factory remained there continuously, there was a constant drift of casual labour moving in and out. A labour turnover of 100 per cent. per annum was not at all unusual, and more than half the accidents in the factory, and also the sickness absenteeism, occurred amongst those who were employed there for periods of six months or less. There were still far too few firms which organised medical services for their employees. There was in London a society of doctors employed by industrial firms; its membership was less than 50, and it included most of the industrial physicians who were at work. In his belief not much more than 20,000 people worked in industries where there was supervision by whole-time doctors in the industrial service. This figure compared disadvantageously with America, where 2,000,000 workers were said to have this advantage.

Dr. STRICKLAND GOODALL said it was the doctor's duty in the first place to ensure the recruiting of healthy material. It was a great mistake to recruit anything else. By recruiting only healthy people, all the healthy would gradually be absorbed into industry, and unemployment and unfitness would become synonymous terms. The examination of the recruit should be undertaken from three standpoints: (1) to see if he was physically fit; (2) to see whether he was suitable for the kind of work he was going to do, which involved technical knowledge of the work on the part of the doctor; (3) from the point of view of the dominant disease, which to-day was cardiovascular disease. In 1911 there were 53,000 deaths from cardiovascular disease, and 15 years later the number had risen to 85,000. The main object of examining recruits was, of course, to ensure efficient workmen and to carry on the industry with a minimal amount of off-duty time. From the recruit's point of view it was entirely advantageous, because it prevented him from wasting his time learning a job he would never be able to do satisfactorily. Dr. Goodall mentioned that of 61,000 men examined for employment with the London General Omnibus Company, no less than 44 per cent. were rejected. In a works with which he had to do, employing 9000 or 10,000 men, about 21 per cent. were rejected. The second function was the maintenance of the health of the worker. The chief methods consisted of teaching the principles of general hygiene, first aid, periodical examinations—not too frequent, but systematic—inspection of buildings or ships as the case might be, arrangements for convalescent care when necessary, and generally the giving of advice about recreational provisions.

SHEFFIELD MEDICO-CHIRURGICAL SOCIETY

A MEETING of this Society on Nov. 5th, with Prof. GRAHAM SIMPSON, the President, in the chair, was devoted to a discussion on

Chronic Abdominal Pain.

Dr. E. F. SKINNER put forward two generalisations about pain: (1) its intensity varies inversely as the nervous stability of the individual, which may be diminished by illness; (2) its significance varies inversely as the richness of its description. He had been struck by the fact that the patients who most complained of pain suffered from functional rather than structural organic disease. As a physical sign pain could only be useful when it recurred frequently enough in different people under similar conditions to make it recognisable. It was often an uncertain guide-post. He suspected that appendicectomy was often done merely on the grounds of chronic abdominal pain. The only pain which was really of diagnostic aid was the type of referred pain which had definitely anatomical localisation.

Mr. E. F. FINCH said that from a clinical point of view pain could be regarded as due to tension. The

spontaneous abdominal pain complained of by a patient was usually vague and very ill-defined. It might become more localised as the peritoneum became involved but then was usually accompanied by physical signs. Pain being a purely subjective symptom there was a natural tendency to refer the patient at once to the radiologist or biochemist for further tests, and thus one of the most important methods of examination—namely, a careful clinical history—was apt to be neglected. The question of operation for chronic abdominal pain with no physical signs was a matter of weighing evidence, and in arriving at a decision the most valuable opinion was that of the family doctor.

Mr. W. W. KING described pain as the most valuable of objective symptoms. When due to retroversion or prolapse it was relieved by lying down. If due to pelvic inflammation, endometrioma, or the malignant invasion of tissues, it was not much influenced by posture, and might even be worse at night. Recurrent pains were generally intestinal rather than uterine in origin. Retroversion—actual, partial, or imaginary—had been blamed for much pelvic pain, but pain associated with retroversion was not necessarily caused by it. In Mr. King's opinion a mobile retroversion did not cause pain in nulliparæ or in women after the menopause. Most retroversions in parous women did not cause pain, but some did. The pessary test was valuable in such cases. If the pain was relieved and recurred after the removal of the instrument, operation could be confidently advised. If the pessary test was not applicable to a particular case, operation might give relief but it was uncertain. Endometrioma was one of the commonest and the least generally recognised causes of abdominal pain. The large masses were easily recognised, but a small nodule often caused great suffering.

Dr. JOHN WILKIE showed skiagrams and gave the clinical history of cases of abdominal pain caused by lymphatic leukæmia, syphilis of the stomach, malignant growth of the lung, calcification of the pleura, and osteo-arthritis of the spine.

Dr. A. G. YATES said that it was important not to forget that chronic abdominal pain might be due to diseases outside the abdominal cavity. Persistent pain was sometimes due to panniculitis. The thick folds of subcutaneous fat felt indurated and might be mistaken for a more deep-seated lesion. It was a good rule always to examine the pupils and the reflexes in cases showing abdominal symptoms. The abdominal crises of tabes might simulate gastric, duodenal, or other lesions. Nerve-root irritation by tumour or spinal caries were other possible sources of error. The functional cases, and especially those of so-called visceroptosis, were perhaps the most difficult of all. They were good examples of Adler's organ inferiority. The poor abdominal development, narrow chest, and acute subcostal angle with displacement downwards of the abdominal viscera constituted a perfect nidus for the development of a psychoneurosis, and the pain in these cases, though real, was psychological and constituted a means of escape from some intolerable situation.

Dr. ARCHIBALD YOUNG spoke of the humiliation which the practitioner felt in ascribing pain to some undetermined gastric disorder. It was often the way of least resistance to accept the patient's own diagnosis of a "gastric stomach." Exact diagnosis by means of X rays and fractional test-meals was impracticable for all cases, but years of practice developed a clinical intuition which enabled one to select the right cases for complete investigation. He believed that chronic constipation was a great cause of pain. It often simulated duodenal ulcer.

Dr. T. H. HARRISON had found that certain types of work were liable to cause abdominal pain. He told of cases in which pain had disappeared on ceasing to work a treadle sewing-machine.

Dr. JAMES MACKINNON said he saw no reason why the analogy of the hysterical knee, where all symptoms often disappeared after an exploratory operation, should not apply to the abdomen. He personally had no experience of such cases. Possibly because there was more to go at in the abdomen he had always found that something was done by the surgeon, but an abdominal operation for "unclear" cases often led to no improvement, and such cases frequently underwent repeated laparotomies.

Dr. R. K. ROBERTSON agreed with Mr. Finch in laying stress on the importance of tension. Probably fewer mistakes would be made if in any case of pain the question was asked if there was anything causing tension in any of the viscera.

Dr. CUTHBERT BARRON pointed out that post-operative pain was often the expression of an anxiety or an exhaustion neurosis in relation to the operation. It was often the sensory nerves at the site of the operation which were disordered. Dyspepsia was the chief cause of pain amongst those who had not been operated upon. Both hypochlorhydria and hyperchlorhydria could cause chronic pain; the former was rare, but the latter was very common.

The PRESIDENT suggested that as the causes of abdominal pain were so numerous and occurred in such diverse regions, the surgeon should cultivate the long abdominal incision after, of course, availing himself of all the resources afforded by X rays and the laboratory.

ULSTER MEDICAL SOCIETY.

AT a meeting of this Society on Nov. 13th, with Mr. HENRY HANNA, the President, in the chair, Prof. LEONARD PARSONS (Birmingham) gave an address on Cœliac Disease. Diagnosis was difficult, he said, because the symptoms came on when the child was about nine months of age and were apt to be attributed to dietetic factors. The diagnosis depends on five main points: (1) passage of large fatty stools; (2) wasting; (3) abdominal distension; (4) anæmia; and (5) evidence of deficiency disease, such as scurvy, œdema, tetany, or rickets. In a few cases xerophthalmia and cataract had been reported. In cœliac disease during its earlier and severer stage rickets was rare; but there was an osteoporosis, which Prof. Parsons regarded as prerachitic. Growth was at a standstill, and although fat absorption was markedly deficient yet enough vitamin D was absorbed to mobilise sufficient calcium and phosphorus to ossify these fragile and atrophic bones. When the diet was corrected, improvement took place and growth started; late rickets might develop, since the absorption of vitamin D was now insufficient for the needs of the growing bone.

Having discussed various theories of causation, Prof. Parsons described the treatment. The diet should be selected from protein milk, skim milk, casein, meat extracts, egg albumin, rabbit, breast of chicken, absolutely ripe bananas, potato crisps, and well-cooked cereals. Some children did better if small amounts of fat were allowed. Any change in

dietary must be made with the greatest care. It was very important to attend to the vitamin deficiency in such a diet. For the anæmia ferrum redactum and brewers' yeast could be given, the value of both of these being due largely to the contamination of copper present. Massage was useful to increase the tone of the muscles, especially of the gluteals and adductors of the thigh, which were especially wasted. In children properly treated the prognosis was quite favourable; genu valgum disappeared and multiple fractures of long standing united. Death was due to intercurrent infections and not to cœliac disease itself.

Prof. W. W. D. THOMSON proposed a vote of thanks, which was seconded by Mr. P. T. CRYMBLE.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

A MEETING of this Society was held in Manchester on Oct. 24th, with Dr. J. W. BURNS, the President, in the chair.

Dr. A. S. GARDEN (Southport), in a communication on Mouth Infection as a Cause of Puerperal Sepsis, described a series of four cases in the Southport Maternity Hospital of patients developing fever from uterine infection after confinement. The first was delivered normally on Jan. 19th and developed a temperature of 102·6° F. two days later. *Streptococcus pyogenes hæmolyticus* was isolated from a cervical swab. The second case was delivered by low forceps on Jan. 24th and two days later had a rise of temperature. The third case on Jan. 29th developed a rise of temperature on the second day, when the fourth case was confined, and her temperature rose on Feb. 11th. The throats of the entire staff were then swabbed. One nurse was found to harbour hæmolytic streptococci without symptoms. She was isolated from the wards; all members of the staff then wore masks during confinements and swabbings and no further rise of temperature occurred.

In April Dr. Garden had personally supervised a normal delivery with a view to making observations. He found that the acting midwife, who wore a mask, admonished and encouraged the patient with words in which there was a frequent use of sibilants and labial consonants. He concluded that aseptic and antiseptic precautions were better carried out in a maternity hospital than in the home, that the danger from "spray" in institutions is greater because of the elevated labour bed, and that with more assistance there is more talking and "spray." He recommended that in all cases effective masks should be worn.

Dr. Garden also described a case of cancer of the cervix complicating pregnancy, and a discussion followed. Dr. J. W. BRIDE (Manchester) showed a fibroid weighing 14 lb. which he had recently removed, and Dr. C. P. BRENTNALL (Manchester) showed radiograms of general œdema of fœtus and imperfect development of fœtal skull resulting in complete extension of head.

DIAGNOSIS OF MALIGNANT DISEASE OF THE LUNG.—In our account of a meeting of the Medical Society of London last week (p. 1072) Dr. G. Vilvandré is reported as saying: "He did not think carcinoma of the lung would be diagnosed in the X ray room . . ." "What I did say," he writes, "was that I did not think *early* diagnosis of cancer of the lung was made, because the cases were sent so late and the disease was already advanced before the radiologist was asked to see the case."

MEDICINE AND THE LAW.

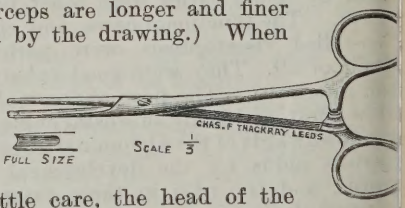
Orthopædics and Faith-healing.

WE described last week the action recently taken by the Stoke-on-Trent Corporation against Pastor Edward Jeffreys, an evangelist, at whose faith-healing meetings splints and surgical appliances were, it was stated, removed from crippled children. The corporation required an undertaking that there should be no interference with the treatment of the children for whose care it is responsible; it also decided to cancel arrangements for the use by Pastor Jeffreys of municipal halls. On Nov. 3rd the town clerk received a letter in which the evangelist explained that his only part with the sick and afflicted who attended his meetings was that of prayer. The letter declared that an open letter had been sent to Mr. Mitchell Smith, the orthopædic surgeon who had conveyed to the corporation the original complaints, with a challenge that "for every one case he can prove is worse I am prepared to bring forward 20 who can testify to physical blessing and healing." The material for examining this latter undertaking is at this stage hardly adequate and the challenge is thus the less likely to be taken up. A more satisfactory passage in the letter declared that, as the Bethel Evangelistic Society was primarily a spiritual movement and as the salvation of souls was regarded as of more importance than the healing of the body, the writer was prepared, "for the sake of the Kingdom of God and the peace of the city," to give his word that he would not touch any leg supports or plasters of any children under treatment by the various authorities of the district. "If it has been done in the past, it has always been with the consent of the parent or some responsible person." The corporation not being satisfied that the promise not to interfere with leg supports, &c., went far enough, the town clerk was directed to write afresh to Pastor Jeffreys. The latter in reply repeated his assurances in a form which the corporation felt itself able to accept. The controversy may therefore, it seems, be regarded as happily ended, and the ban placed upon the evangelist's meetings in local public halls has been removed.

NEW INVENTIONS

RADIUM NEEDLE RECOVERY FORCEPS.

THE purpose of this special pair of forceps is, in the main, to assist in the removal of radium needles. The point of the forceps is as fine as possible, tapered gently, and can be used as a probe. (The jaws of the forceps are longer and finer than indicated by the drawing.) When the head of the needle has been located, the forceps can be opened and, with a little care, the head of the needle can be gripped into grooves in the point. I find these forceps very useful when a needle has become caught in the skin or in the fascial layers, especially if the thread has broken. They are also very useful for inserting radium needles in certain situations, as the point of the forceps themselves can be pushed into the tissue along with the radium needle. The instrument is made by Messrs. C. F. Thackray, of Leeds.



ROBERT R. MORRISON, M.B., Ch.B. Glasg., D.M.R.

REVIEWS AND NOTICES OF BOOKS

Atlas of Pathological Anatomy.

Compiled by E. K. MARTIN, M.S., F.R.C.S. Bristol: John Wright and Sons. 1930. Pp. 487. 75*s*.

FIVE years ago the editorial committee of the *British Journal of Surgery*, under the chairmanship of Lord Moynihan, decided to commence the publication of an "Atlas of Pathological Anatomy" as a supplement to their journal. To quote from the introduction, they realised that "the study of morbid anatomy has of recent years been neglected and has been overshadowed by the advance of bacteriology. Many surgeons are of the opinion that this is to the disadvantage of the science and art of surgery, and consider that efforts should be made to stimulate the study of specimens obtained by operation or by autopsy. It is as a result of this feeling that the new 'Atlas of Pathological Anatomy' has originated." The first volume, compiled by Mr. E. K. Martin, has now been published. It is a fine production, containing 302 illustrations, 135 being coloured. The work is divided into five fasciculi dealing with tumours of bone, diseases of stomach, breast, kidney, gall-bladder and bile-ducts, and inflammation of bone. The specimens selected give a remarkably complete survey of the subject, and the accuracy of their reproduction is guaranteed by the names of the artists concerned—Mr. Maxwell and Mr. Sewell for the naked eye drawings and Mr. Ford for most of the microscopic slides. The paper and printing maintain a high standard.

In the preparation of a work of this kind two different methods may be used. The artist may be present either in the operating theatre or in an anteroom, where he may draw the specimen in its actual living condition. This, while ideal as regards colour and relations, has serious practical difficulties. For instance, Kast, Fraenkel, and Rumpel, adopting this procedure, needed 17 years to prepare their atlas for publication. The second much simpler method chosen in the volume under review is to confine the cases illustrated to museum specimens. This has the advantage that any reader sufficiently interested may visit the museum and inspect the actual material from which the illustration was drawn. The disadvantage is that however well a specimen may be preserved its colour is never that of the living tissue. This applies with particular force to some of the older cases here illustrated; for instance, no example of the common myeloma (osteoclastoma) of bone has any approximation to its true colour.

The editing is open to criticism in one or two respects, the most serious being the labelling of the illustrations. There is no heading at the top of the page, but the museum name and number, in rather small type, are tucked away in the lower left-hand corner; the description, on a different page, has a large heading, but the reference number is again hidden, this time in the middle on the right. This is especially irritating when one description applies to several plates of the same case. It could easily be remedied in future editions by printing the same heading at the top of each page dealing with the same material. The function of an index again is to enable any subject to be turned up rapidly. It is annoying to be constantly referred to some other title. These are, however, only matters of detail; in essentials the atlas is a most satisfactory production, and we shall look forward with pleasure to the next volume.

This work should help to raise the literature of British morbid anatomy to the position which it held in the best days of the New Sydenham Society.

A Short Practice of Midwifery.

Tenth edition. By HENRY JELLETT, B.A., M.D. Dub., F.R.C.P.I., Consulting Obstetrician to the Department of Health, New Zealand; Ex-Master of the Rotunda Hospital. London: J. and A. Churchill. 1930. Pp. 662. 18*s*.

THIS text-book of midwifery has now held its place as one of the most popular for over thirty years. The present edition appears to differ but little from its predecessors, the main change being found in the chapter on the treatment of eclampsia; this is particularly well done, and puts forward the present position clearly and impartially. Many obstetricians will be surprised to find that the author regards "prophylactic pubiotomy" as the ideal treatment of cases of contracted pelvis likely to cause trouble. In this chapter he emphasises the fact that in cases of disproportion forceps should be applied only for maternal or fœtal distress and not as a therapeutic measure for the treatment of the disproportion. This important principle of midwifery is rarely made so clear in the books.

Most authorities are now agreed on the difference between contraction ring distocia and retraction ring distocia. The ætiology of the two conditions is quite different, and treatment which is safe in the former would be most dangerous in the latter. Dr. Jellett does not seem clear about the best treatment to apply; he discusses operative measures which would, however, be highly dangerous if the lower uterine segment were thinned. The proof-reading has not been carried out too carefully. One serious error occurs in describing the method of delivery by forceps in persistent occipito-posterior positions. Here, the face is described as slipping from behind the perineum. Such an error, obvious though it may be, is serious in a text-book designed for students.

The book is easy to read and is well illustrated with clear and simple figures. It deserves to maintain its popularity for many years to come.

An Elementary Course in General Physiology.

By G. W. SCARTH, Professor of Botany; and F. E. LLOYD, Macdonald Professor of Botany, McGill University, Montreal. London: Chapman and Hall. 1930. Pp. 258. 13*s*. 6*d*.

"In contemplating vital processes we are at once confronted with phenomena which appear to be peculiar to life . . . . the increasing tendency of modern physiology is to analyse these into more fundamental, that is, physical and chemical, mechanism."

WITH these opening remarks the authors introduce their readers to a short course in general physiology, which has been planned with care. The book is divided into two parts, dealing respectively with the theoretical aspect, and instructions for the execution of practical exercises illustrative of the phenomena of life. The course is intended primarily for students, and in this respect it serves its purpose well, but the book could be profitably read by others who are desirous of familiarising themselves with the essential features of this branch of physiology. The various chapters deal with cell structure, surface tension, adsorption, diffusion, osmosis, H-ions, electric

potential, and colloids. The physical or chemical examination of all living tissues is open to the introduction of many fallacies, and these the authors are at pains to stress where necessary. The book is remarkably free from typographical errors, but in the first paragraph on page 221 the word "hypotonic" seems to be a misprint for "hypertonic." An appropriate bibliography is supplied at the end of each section. The authors respect the views of those who adhere to the vitalistic theory of life, and although it is their aim to support the mechanistic school of thought the reader is guided to an appreciation of the complex organisation of living matter, "so that in becoming a physical chemist he will not cease to be a biologist."

Dosage Tables for Roentgen Therapy.

By FRIEDRICH VOLTZ, Professor and Head of the Radiological Department, University Clinic for Women, Munich. Translated from the Second German Edition. London: Humphrey Milford, Oxford University Press. 1930. Pp. 120. 7*s.* 6*d.*

AFTER seven years a revision of this small and very useful volume was fully due, for X ray therapy has developed in many directions, especially on the technical side. Many new sections have been added to the work and the old ones have all been revised. The first edition has been for long the constant companion of all who work in therapeutic X ray departments. As the author explains, "it is not a 'prescription' book but is directed entirely towards the estimation of physical quantities. This estimation is necessary and will remain so, for whatever stress is laid upon biological factors it must always be remembered that the biological effect of X rays can only be ascertained quantitatively by means of physical constants." The book succeeds admirably in its purpose and has become an essential possession for all who use X ray therapy intelligently.

Sick Children: Diagnosis and Treatment.

By DONALD PATERSON, M.D., F.R.C.P., Physician to Out-patients, Great Ormond-street; Physician for Diseases of Children, Westminster Hospital. London: Cassell and Co., Ltd. 1930. Pp. 538. 16*s.*

Dr. Paterson has provided for the use of senior students and practitioners a volume of handy size dealing with certain aspects of pædiatrics. It is highly condensed, and theoretical considerations have been to a large extent eliminated. Each section contains a brief synopsis of the ætiology, but is almost entirely concerned with the diagnostic features and the treatment of the condition described. The illustrations are numerous and of high quality. The account of the feeding of infants and children is rather more detailed than other parts of the book, and contains useful diet tables. The chapter on the respiratory system is particularly lucid, and its value is enhanced by a series of admirable radiograms illustrating the progress of disease. The methods of treatment described are in nearly all cases those which have stood the test of time, and attention is paid throughout the book to the general management of the child and to psychological considerations.

Éléments de pharmacodynamie générale.

Par EDGARD ZUNZ, Professeur à l'Université de Bruxelles. Paris: Masson et Cie. 1930. Pp. 488. Fr. 75.

IT has been said that modern science consists mainly in amassing details, and that the special need of the moment is the formulation of definite laws from ascertained facts. Prof. Zunz's book is of particular value in that it discusses the general principles of pharmacodynamics, and attempts to determine the laws which govern the action of remedial agents. He could not have been expected to succeed completely in this aim, for pharmacology is based on the fundamental sciences of physics, chemistry, and physiology, in which, of course, finality has not been reached. But he is to be congratulated on the manner in which he has performed the difficult task of selecting his material, and on the judicious way in which he has handled it. He discusses the general principles concerned in the absorption, retention, and elimination of drugs, the ways in which they modify living tissues or are themselves modified, and the various factors which influence their action. Other chapters deal with tolerance, synergism, antagonism, the intricate subject of the relationship between chemical constitution and physiological action, and the methods of biological standardisation. Each chapter is followed by an excellent bibliography drawn from a great variety of journals, which should prove of considerable assistance to those interested in the literature of the subject.

Prof. Zunz's work should stimulate further study of this important branch of medical science.

The Psychology of Clothes.

By J. C. FLÜGEL, B.A., D.Sc. London: Hogarth Press and Institute of Psycho-Analysis. 1930. With 32 illustrations. Pp. 256. 25*s.*

THIS book is the latest addition to the International Psycho-Analytical Library, a series of volumes issued under the general editorship of Dr. Ernest Jones, to which Dr. Flügel has already contributed a study of the influence of the family on the mental development of the individual, the evidence being derived through psycho-analytical methods. Of the present work the thesis is that an investigation of human dress from the earliest down to modern days will display the psychological relations of clothing. The inspiring character in "Sartor Resartus" expressed the view thus—"neither in tailoring nor in legislating does man proceed by mere accident, but the hand is ever guided on by mysterious operations of the mind."

The parts played by modesty, love of ornament, and need for protection are set out by Dr. Flügel in a clear and amusing manner, and there is a particularly informing chapter on "sex differences." Here the reflection that the more uniform and less decorative costume of modern women in the daytime is due to the active part now played by them in social life is an obvious one, but the remarks on the masculine renunciation of gay and elaborate clothes and its effect on male psychology are shrewd. Of less medical interest are the sections on the types of dress, the forces of fashion, and the evolution of garments, while the chapter on the future of dress conveys in a tentative manner the view that the wearing of clothes is but an episode in human history—a prolonged episode as the author's studies show—and that nudity will become the rule.

The book is timely as well as good. The part played by the application of psychological teaching to ætiology and therapeutics becomes increasingly apparent, and knowledge such as is deftly conveyed by Dr. Flügel, which not long ago would have been considered by medical men as interesting because curious, is seen to-day to have many practical applications.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 22, 1930.

ACUTE APPENDICITIS.

BOTH in diagnosis and treatment abdominal surgery has made great advances during the last 20 years but, judging by results, acute appendicitis has not been taking its proper share in this improvement. While estimates vary, there is general agreement, both here and in America, that the mortality is unnecessarily high. E. R. FLINT gives it as 5·7 per cent. in a group of 1080 cases at Leeds General Infirmary; MCNEILL LOVE'S figures show a death-rate of 6·2 per cent. among 3123 cases treated in two London teaching hospitals; JEFF MILLER [1] finds 9·9 per cent. of fatal cases among 2415 admitted to the two largest institutions in New Orleans. GREY TURNER, on the other hand, is able to report a mortality of 3·5 per cent. among 2252 cases of his own, and there can be little doubt that even this proportion could be much reduced if the knowledge in our possession were generally applied. The organisation and provision for dealing with surgical emergency in municipal and urban districts is improving; hospital accommodation is more adequate; but there is still need of a compelling sense of the urgency of acute appendicitis. The truth has been a little fogged by expert discussions on expectant treatment but, in fact, as Mr. BARRINGTON-WARD says on p. 1126 of our present issue, "the whole surgical opinion of the world is agreed on one point. If a case of appendicitis is seen within 24 hours of the onset of the attack, operation should be undertaken." There are, indeed, no two opinions on the treatment of acute appendicitis; authorities differ only on the treatment of the *peritonitis* which may result from failure to remove the appendix in time. The best moment for operation has then passed and it is these cases that account for the high mortality. Therefore, no effort should be spared to secure that every case is seen by a surgeon and submitted to operation within 24 hours of the onset.

"Earlier diagnosis" is a cry one hears on every hand in surgery and medicine, but never with better cause than in acute appendicitis. Every case which goes on to perforation should be regarded as a failure, and if there is a failure of this kind the responsibility presumably lies with one or more of those concerned—the patient, the practitioner, and the surgeon. Clearly the patient often has himself to blame. He seldom knows, for instance, that the appendicular pain is usually referred to the *centre* of the abdomen above the umbilicus; if he did, he would go to his doctor in this, the stage of obstruction of the appendix. But instead the disease proceeds unobserved to involvement of the visceral peritoneum, made manifest by pain in the right iliac fossa. Then the patient himself—unless unlucky enough to be a child—will probably suspect the possibility of appendicitis, and seek medical advice. But already much damage may have been done. Self-medication is becoming increasingly common, and for general abdominal pain the parent, the chemist, the school matron, or the nurse still recommend "a good dose of castor oil." The danger of this dose must be more widely appreciated. Lord MOYNIHAN is reported to have said that he never saw a ruptured appendix in which purgation was not only an impressive antecedent but a definite cause. We must somehow teach, until it is general knowledge, that the treatment of abdominal pain is to put the patient to bed and send for a doctor. Only the doctor can decide when, if at all, a purgative is needed and can be safely given.

When the practitioner diagnoses appendicitis, what is he to do? If there is an area of localised rigidity in the right iliac fossa the appendix is probably turgid, obstructed, inflamed, and on the point of perforation. The case is an emergency; there is one line of treatment only; no time may be lost before the appendix is removed. The choice of nursing home or hospital, the giving of enemata, the examination of the blood—these must not delay getting the patient to the theatre, for no stage in the disease is as urgent as this. If peritonitis or an abscess is already present when the case is first seen, preparation for operation should proceed, for the decision to delay operation should rest with the surgeon, and expectancy is only permissible under his immediate supervision with the theatre ready at hand. Even if the practitioner thinks that delay offers the best chance he will be well advised to call a surgeon as soon as possible, for only by repeated examination can the latter determine whether peritonitis is subsiding or extending. His decision may be far from easy, for even "simple" cases may require the best of surgical judgment and technique. It is now generally agreed that a limited approach is undesirable where there is doubt of the diagnosis, but in the presence of peritonitis there is much to be said for a lateral incision, since it causes less disturbance of limiting adhesions, and therefore less soiling of the general peritoneal cavity. The fixity of the appendix adds to the difficulty of its removal; a minimum of manipulation of the inflamed ileum is desirable; and on this account the lateral oblique incision of MORISON is preferred by many, and allows of convenient drainage of the appendix bed and usually of the pelvis. The essentials of the after-treatment are well understood and generally practised—namely, rest and the maintenance of the fluid supply by the rectum. Purgatives must be avoided until the toxæmia and ileus are passed and the enthusiasm of the efficient sister, to whom the giving of aperients is often deputed, must accordingly be curbed. Intestinal paralysis, with its silent distension and slow poison after the early use of purgatives is only too ready to return.

[1] Jour. Coll. Surg. Austral, July, 1930, p. 40.

DENTAL CARIES AND DIET.

THE causes of dental decay in children are still the subject of lively controversy. One school holds the view that caries is produced by lack of oral cleanliness, and that the best diet for its prevention is the one which avoids bacterial multiplication in the mouth; the other school maintains that the chief predisposing cause of caries is the faulty nutrition of the teeth, due to the imperfect calcifying properties of the diet. This latter point of view was first put forward by M. MELLANBY many years ago, and she has since supported it by a mass of experimental evidence and clinical observation, including a demonstration that caries in children can be arrested by supplying those dietetic factors which promote good calcification of the bones and teeth. The dental officer and physician in charge of the department of pædiatrics in the University of Iowa College of Medicine reported in 1928 [1] that they had observed a number of instances of arrested caries in children, and on examining the records of the cases had found that without exception these children were diabetic patients who had been under treatment for six months or more. The disease itself was not responsible for the arrest of caries, for in many of the children during the early periods of observation active spread of caries was obviously taking place. The diets given to these patients consisted largely of milk, cream, butter, eggs, meat, cod-liver oil, bulky vegetables, and fruits. The predominating features of these diets are their richness in fat-soluble vitamins and mineral salts, and their poverty in carbohydrate, especially carbohydrate in the form of cereal. It was noted that with these diets caries was arrested whether the usual routine of oral hygiene was scrupulously carried out or entirely neglected. Observations have since been made by the same workers [2] on the arrest of caries in children not suffering from diabetes. It was very soon found that the diabetic diets were just as efficient in producing arrest of caries in other children; unless, however, continuous supervision was exercised over the food actually eaten by these children, active caries would begin again after it had been arrested. It is mentioned that the children were allowed sweets after their meals, but not at other times. Considerable variation in the distribution of calories between fat and carbohydrate was found to be compatible with arrest of caries. Provided that cod-liver oil, a large quantity of milk, and a certain amount of fruit and fresh vegetables were given, arrest of caries was observed both when large amounts of fat and when large amounts of carbohydrates in the form of sugars or other simple carbohydrates were included in the diet. Large unfilled cavities in which acid-producing bacteria could collect were purposely left in some of the children receiving the protective diet, and in no case did the caries progress as the result. It was known that some of the children in whom arrest of caries was determined did not use a toothbrush. In some cases the parents maintained before treatment was begun that their children were already receiving substantially the same diet that was now being recommended for them, and it was only by insisting that definite fixed quantities of the protective foods should be regularly taken by the children that the desired results were obtained. No details of individual cases are reported in these papers, but the conclusions are in line with the clinical results previously obtained by Mrs. MELLANBY. In each case the dietetic factors which produced arrest of caries were essentially a liberal supply of foods rich in fat-soluble vitamins and a minimal supply of cereal. Both are in favour of the view that the cause of dental caries is rather a general metabolic disturbance affecting the nutrition of the teeth than a local process arising from faulty oral hygiene.

[1] Boyd, J. D., and Drain, C. L.: Jour. Amer. Med. Assoc., 1928, xc., 1867.
[2] Amer. Jour. Dis. Children, 1929, xxxviii., 721.

NEW METHYLATED SPIRITS REGULATIONS.

SUBJECT to a protest made below in a matter to which the Earl of Donoughmore's Committee on the powers of departments is doubtless giving attention, we welcome the fact that the new Methylated Spirits Regulations (which will come into force on Jan. 1st) are accompanied by valuable explanatory notices. Part X. of the new Regulations deals with industrial methylated spirits for medical and other purposes. Article 50 in Part X. concerns wholesale chemists and dispensing chemists and their authority to receive industrial methylated spirits for sale. Article 51 concerns dispensing chemists and their authority to receive such spirits for dispensing purposes. Article 53 deals with medical practitioners, dentists, veterinary surgeons, hospitals, and nursing homes. The Commissioners of Customs and Excise circulate an explanatory notice in respect of each of these three Articles. Industrial methylated spirits are defined as consisting of 95 parts of ethyl alcohol denatured with 5 parts of wood naphtha. A medical practitioner or other person or body within Article 53 may obtain such spirits in quantities not exceeding half a gallon at a time from any authorised wholesale chemist or dispensing chemist merely on a written order signed by a medical practitioner, dentist, or veterinary surgeon. Hospitals and nursing homes, suggests the official notice, should arrange for a doctor to whom they are known to sign orders for them. Apart from this provision, any medical practitioner, or other person or body within Article 53 may, on application to the nearest officer of Customs and Excise, obtain authority to receive industrial methylated spirits. Such officers presumably are not to be found by merely shaking the branches of the nearest tree, and it would have been helpful if the notice had contained hints for their discovery. Armed with the necessary authority the practitioner or other person forwards a requisition in an official form from a book which the officer will supply. On the requisition a methylator may supply not less than five gallons at a time, or an authorised wholesale or dispensing chemist may

sell quantities not less than four gallons at a time. Under whichever of these provisions the spirits are obtained, they must not be used or disposed of for any other purpose than (*a*) making up articles to be dispensed for medical, surgical, dental, or veterinary purposes; or (*b*) use or dispensing (without admixture or diluted with water) for some medical, surgical, dental, veterinary, or scientific purpose.

Not all these provisions seem to be patent upon the face of the Statutes or the new Regulations made thereunder. This brings us to the protest which we desire to place on record. Article 53 refers vaguely to conditions which the Commissioners of Customs and Excise may prescribe. It appears from the accompanying notice that the Commissioners have in fact prescribed at least two important conditions. One is that no greater quantity than one pint of industrial methylated spirits is to be dispensed at one time to or for the use of one person, either alone or as an ingredient in any article. The other condition is that every bottle dispensed to a patient must be labelled "for external use only" or "not to be taken" or otherwise to the same effect. We can see no conceivable reason why these "conditions" could not have been inserted in the Regulations themselves. It is bad enough that Acts of Parliament should be meaningless and unworkable without reference to "Statutory Rules and Orders" made under the Acts. It is far worse when even these Rules and Orders are supplemented with further subordinate legislation. We seem to have heard of the legal maxim *delegatus non potest delegare*. If the maxim has any force, is a department entitled, when a power of legislation is delegated to it, to delegate to itself indefinitely some further power of legislation? Even if such conduct is legally correct, it is slovenly and inconvenient. Acts and Statutory Rules and Orders should be complete in themselves. The medical practitioner who painfully studies and obeys them should be immune from further prospective penalties. But, as the law of industrial methylated spirits is likely to stand next year, a doctor may find himself in trouble for non-compliance with something "prescribed" with less than the proper formality and publicity. Even the restrictions imposed by Regulations under the Dangerous Drugs Acts never went so far as this.

ANNOTATIONS

MEDICINE AND THE STATE.

THE Public Health Congress was opened at the Agricultural Hall on Monday last by the Minister of Health. At this time, when schemes of State and universal medical service are being discussed on all sides, it is natural that the first subject prescribed for discussion should have been "Medicine and the State." Sir Arthur Newsholme, in a paper read at the opening session, laid down as governing principles the following nine postulates: "Every member of the community should have, so far as essentials are concerned, equal provision for the treatment of illness. Complete medical service must be available gratuitously for all who cannot pay. The patient's welfare forms the primary and predominant consideration in all planning for a 'general medical service.' A consultant service and all necessary specialist and ancillary forms of diagnosis and treatment should be available for the individual patient, normally through the agency of the family doctor. Treatment should be educative. The causes and conditions leading to illness should be sought out and, to the full extent practicable, preventive advice should be given and preventive action taken. Neither medical practitioner nor medical officer of health should allow his attention to be monopolised by treatment, thus diverting study and action from preventive measures. The individual doctor can only fulfil the immense possibilities of good implied in his relationship to his patient when he is imbued with a living appreciation of the profoundly ethical importance of his work and his teaching. For medical treatment the family, not the patient, should be the unit. It is in the interest of the family, ceteris paribus, that one doctor should be able to examine and advise every member of the family. It is dishonest to assume and continue responsibility for the treatment of a patient unless one has sought to obtain accurate knowledge, determined by detailed examination of his physiological systems, of the patient's fundamental conditions of health."

In commenting on these points Sir Arthur Newsholme acknowledged the debt owed by the public health service to lay experts and to the devoted work in the past of private charity, in general practice, in poor-law provision, and in hospital work. Mentioning the "abuse" of the hospital by the panel patient, he took occasion to upbraid the abuse of the patient by the hospital—the waste of time and perfunctory work involved in the present system of seeing patients without appointment. The public health authorities, he said, would be happy to hand to the family doctor their work for infants, children, and the tuberculous as soon as the country developed a general practitioner system which would ensure the regular and reliable overhaul of every child and patient. The excessive expenditure on social services could not be met by stopping any medical service; it could be met by coördination and curb on overlapping and extravagance. Often ad hoc buildings and staffs were provided for each service, where a single health centre would be more efficient as well as more economical. The day of single-handed medical practice is past, Sir Arthur declared, but expert assistance must only be available in collaboration with the ordinary medical attendant, who must learn to be a medical officer of health in the range of his own practice, and must not lose his essential position as family adviser. The increase in specialised knowledge which makes it so hard for one man to be an adequate medical adviser could be largely met by grouping practitioners in an area, so that the opinion of each or all was available for any patient. In conclusion, Sir Arthur touched on the vexed problems of over-prescribing and certification, suggesting as remedies that the doctor should resolve never to give a prescription that he would not give to his own family, or that was only a placebo to cover inadequate understanding of the patient's condition; that the patient should pay a part of the cost of drugs; and that the sickness insurance societies should be regionalised and placed

in some respect under county and county borough administration so that excessive sickness could be analysed and investigated.

OCULAR NEUROSES AND SO-CALLED EYE-STRAIN.

How are we to treat a patient who complains of persistent pain and discomfort in the eyes when the most painstaking examination can find no error of refraction, except such as has already been corrected by appropriate glasses, no defect of muscle balance that could possibly cause the symptoms complained of, no undue demands on the accommodation, and no abnormality of the conjunctiva, cornea, fundus, lens, or other structures of the eye, or defect in their functional activity? In these cases there is a temptation to tell the patient that he is suffering from "eye-strain" and to prescribe rest from near work, when there is no certainty that the diagnosis is the correct one or the treatment likely to be effective. Or it may be that discovering an error of a quarter of a diopter, or even of one-eighth, in the astigmatic correction that the patient is wearing, or an error of 5° in the axis of a weak oblique cylinder, we are inclined to attribute everything to that. It may be that there are patients to whom such diagnoses are applicable, but they are certainly very rare. Dr. George S. Derby, of Boston, speaking at the eighty-first annual session of the American Medical Association last June,[1] expressed the opinion that in his country the ophthalmologists produced more neuroses than they cured. "Eye-strain," he says, "is a terrible and serious bugbear to the public; would that the word had never been coined." And again, "It is far more dangerous to tell a patient to rest a healthy pair of eyes than to use them. Many a sensitive patient has been made hypersensitive by the prescription of rest and dark glasses." Without questioning the importance of correct refraction he implies that the injury inflicted by incorrect glasses is far less than that due to the unnecessary prescription of glasses at all for patients who are inclined to be neurotic. As an example, he cites the case of a healthy man of 48 who, complaining of some discomfort of the eyes with normal vision but a hypermetropia of plus 1·0 D., had had spectacles of plus 1·0 prescribed for distance. He had further been advised to give up smoking, card-playing, the movies, driving a car, and reading, and to lie down every afternoon to rest his eyes. All this advice he had followed without the slightest benefit, and he still suffered from aching eyes. On returning to a normal life and giving up his distance glasses, so that his attention was taken away from his supposed eye troubles, he was cured. Dr. Derby's treatment of these cases is to discuss with them their habits of life and suggest improvements. Rarely, he says, is it necessary to call in a trained psychologist. In 95 per cent. of these cases what is needed, he finds, is a willingness to spend some time in studying the case, and sound common sense. In the discussion that followed Dr. Derby's paper there was general agreement with his point of view, though some speakers were inclined to criticise him for laying too little stress on the necessity for an absolutely accurate refraction. This sort of criticism would also probably be made by many in this country who believe, with Mr. Ernest Clarke, that the difference of a quarter, or even an eighth of a diopter, in the strength of a cylinder may make all the difference between comfort and discomfort for the patient. It probably depends upon the patient, and no rule can be laid down which shall be applicable to everyone. In the case of purely spherical corrections of a minimal degree, however, there can be no question that it is a mistake to insist on the wearing of glasses for distance in the hope that it will cure symptoms, unless the prescriber relies on the power of suggestion rather than on that of common sense.

[1] Jour. Amer. Med. Assoc., Sept. 27th.

FUNCTIONAL ALBUMINURIA IN CHILDREN.

THE occurrence of albuminuria in children and adolescents in a functional, cyclical, or orthostatic form has attracted attention for many years. Extensive investigation has always been difficult, because there are obstacles in the way of collecting numerous specimens of urine from groups of healthy young people, and apart from H. H. Bashford's studies at the General Post Office,[1] most of the information published in this country has been derived from insurance work and examination of recruits for the Army. The results of a large inquiry are now recorded from Kharkov in the Ukraine by F. Levitus and W. Rabinowitsch,[2] who have observed the incidence of functional albuminuria in a group of 1421 healthy school-children ranging from 8 to 14 years of age. From a single analysis 197 children were found to have abnormal urine, a percentage of 13·8. Up to the age-limit of 14 the occurrence of albuminuria increased with age, and a sex difference, noted by other authors, was shown by the fact that girls in the younger age-groups, between 8 and 12, had a higher percentage of albuminuria than boys. Some writers have maintained that the presence of acetone bodies in the urine in addition to albumin is a feature of these functional cases, but Levitus and Rabinowitsch found no such association in two-thirds of the cases. The amount of albumin varied from a trace to 3·3 parts per 1000. The presence of renal epithelium besides albumin was noted in 69 per cent. of cases, and casts as well in 12·7 per cent. Thus the presence of these bodies did not by any means negative the diagnosis of functional albuminuria. It was realised that a single specimen of urine is useless for exact diagnosis of functional albuminuria, so two groups of 100 children were selected in one of which a single examination had shown normal, and the other abnormal, urine. In both groups four specimens of urine were collected during the day. By making the children micturate once during the night, two to three hours after they had gone to bed, it was arranged that the morning specimen should contain none of the previous day's urine. Three other specimens were obtained, at midday, afternoon (3 to 4 P.M.), and evening (8 to 9 P.M.). Although the morning specimens contained albumin much less often than those obtained later in the day, they were by no means always free from it, and there seemed to be no definite optimum time of day for obtaining either positive or negative specimens. Thirteen cases of albuminuria were found among the 100 children who had shown normal urine on a single examination, so that the true percentage incidence in school-children was raised from 13·8 to 26·8. It has often been maintained that children with functional albuminuria complain of various vague symptoms such as poor appetite, headache, and dizziness, but comparing two groups of albumin-free and albuminuric patients, Levitus and Rabinowitsch could find neither quantitative nor qualitative differences in such subjective symptoms. No difference could be found, either, in the previous occurrence of the

[1] THE LANCET, 1926, ii., 1305.
[2] Jahrb. f. Kinderh., Oct. 1930, p. 188.

specific fevers in the two groups, nor was there any obvious difference in the habitus of the children who had albuminuria as compared with the other children. Blood counts, blood-pressure readings, and tuberculin tests all gave the same result—namely, that albuminuria as a "functional" condition does not appear in any special type of child. There is therefore, they hold, no definite clinical picture apart from the urinary findings. The occurrence of alternating positive and negative phases is looked upon by these investigators as the essential feature for diagnosis, and in five cases in their series where albuminuria was constant the diagnosis of chronic nephritis was considered to be the correct one.

THE HAUSA AND THEIR DIET.

THE northern provinces of Nigeria are inhabited largely by a negroid mixture of races spoken of as the Hausa, and by a semitic race known as the Fulani, which has given up its original nomadic life and settled in towns. Dr. W. E. McCulloch[1] has conducted an inquiry into the dietetic habits of these natives and has attempted to correlate certain specific food deficiencies which his investigations have revealed with the very unsatisfactory state of health existing in this part of the world. The inhabitants are by no means savages, but general ill-health is widespread among them, and their infant mortality-rate is appalling. Their physique is not strikingly different from that of European races, but their weight is less than that of individual Europeans of the same height, and they reach their maximum height at an earlier age than white races of mankind. Their resistance to infections is notoriously low, as it appears to be throughout the negroid races of Africa. Epidemics of relapsing fever and small-pox sweep through the country with devastating results, and bronchitis, pneumonia, and tuberculosis steadily claim large numbers of victims. Gastro-intestinal disturbances are common, and may furnish half the cases that attend the native hospitals. The teeth of the women are usually well preserved, possibly owing to their habit of chewing the flowers of the tobacco plant which stain the teeth and appear at the same time to protect them from caries. The teeth of the children and of the men are rarely good, and cannot be compared with the remarkably good teeth of the West Indian negro who habitually chews sugar-cane. The birth-rate is low, largely on account of the reduced fertility of the male, who indulges in polygamy; abortions are very frequent, although syphilis does not appear to be particularly widespread. In one of the chief towns the infant mortality-rate for 1927 was 412 per 1000. Specific food deficiency diseases are not uncommonly met with. Beri-beri and scurvy occur during times of scarcity, goitre is fairly prevalent both among the inhabitants and among their cattle, and xerophthalmia is met with in young children. Rickets appears to be a rare disease; chronic anæmias are common.

The staple foods of the natives are millet seed, Guinea corn, adulterated sour milk, and soup composed of green leaves. Ground nut oil and meat are used sparingly by the masses and in relatively large quantities by the more wealthy families. Condiments, spices, and sweets are widely consumed. The native "salt" contains little or no chlorine. The glaring fault of the dietaries is that they are apt to consist almost entirely of cereal products. Milk is purchased in fairly large quantities, but in view of the fact that it is habitually adulterated with more than half its bulk of water before it is sold, the true consumption is not large, which means that the population suffers from a deficiency of calcium and of protein of good biological value. Fat-soluble vitamins must be markedly deficient, and though the lack of vitamin D in the food is to a great extent made good by abundant sunshine, the shortage of vitamin A is probably related to the susceptibility of the population to infections. Vitamins B and C are present in insufficient quantities, so that with any restriction of diet definite symptoms of the corresponding deficiencies may become manifest with great rapidity.

The recommendations made by the author for improving the nutritional status of these peoples are based on strictly practical and economic lines. In the first instance, every encouragement should be given to increase the quantity and improve the quality of the milk consumed by the masses. This could be brought about by exempting milk-bearing cattle from the cattle tax on condition that they were kept for supplying milk to urban populations, and by making the adulteration of milk an offence punishable only by imprisonment and not by fines. The deficiency of mineral salts and vitamins could be partly corrected by planting in the neighbourhood of the towns large reserves of trees with edible leaves, of which a considerable variety are known. The sweet potato is a valuable crop, not merely for the sake of its tubers but on account of the richness in calcium of its green leaves, and its cultivation should be strongly encouraged. These comparatively simple suggestions should help very materially to correct the very imperfect diets in vogue at present, and the obvious benefits to be expected from their wide adoption would make it easier to introduce in the future still further dietary improvements.

[1] An Inquiry into the Dietaries of the Hausas and Town Fulani of Northern Nigeria, with some Observations of the Effects on the National Health, with Recommendations arising therefrom. By W. E. McCulloch, M.D. West African Medical Journal, 1929–30, vol. iii.

ANTITOXIN TREATMENT OF DIPHTHERITIC PARALYSIS.

THE employment of antitoxin in diphtheritic paralysis, which has been advocated by several clinicians on the Continent, notably by Comby in France and Heubner and Jochmann in Germany, has received little support in this country, in view of the natural tendency of this condition to spontaneous recovery and the failure of the treatment in experimental diphtheritic paralysis. Commenting on a case recorded by the late Dr. G. S. Middleton in these columns many years ago, Dr. J. D. Rolleston[1] suggested that the success attributed to this treatment was due less to a specific than a psychotherapeutic action. Last month, however, Prof. U. Friedemann and Dr. A. Elkeles,[2] who appear to be rather in favour of the method as the result of their clinical experience, record some experiments on rabbits which they think give some evidence supporting the serum treatment of diphtheritic paralysis. They found in the first place that both in the normal rabbit and in the human subject suffering from diphtheria, antitoxin could not penetrate to the cerebral circulation, so that it might be supposed that diphtheritic paralysis could not be affected by serum treatment. This supposition, however, was met by the fact that intracerebral diphtheritic intoxication in the rabbit could be cured by large doses of antitoxin injected intravenously,

[1] THE LANCET, 1908, ii., 261.
[2] Deut. med. Woch., Oct. 10th, p. 1725.

the apparent discrepancy being explained by the theory that cerebral diphtheritic intoxication renders the cerebral circulation accessible to antitoxin. The application of these experiments to diphtheritic paralysis in man is that in this condition diphtheria toxin is firmly attached to the central nervous system, and therefore the possibility of the cerebral circulation being accessible to antitoxin must be considered. The experiments, however, indicate that only very large doses of antitoxin offered any prospect of success. Moreover, the writers admit that their experiments deal only with prophylaxis, whereas in clinical diphtheritic paralysis the question is one of treatment. It may be mentioned in this connexion that Rosenau and Anderson,[3] to whose experimental work on guinea-pigs the German writers do not allude, found that a very small quantity of antitoxin, given 24 hours before or at the time of infection with diphtheria toxin, prevented the development of paralysis, and that antitoxin given 24 hours after infection modified the paralysis. On the other hand, they found that antitoxin administered during the various stages of the paralysis had no power to save life or ameliorate the symptoms; neither had antitoxin any influence in preventing paralysis if injected shortly before the paralysis began.

AN AMERICAN PSYCHOPATHIC HOSPITAL.

VISITORS returned from the United States have a lot to say about the enlightened endowments and systematic psychological and psychiatric education which they find in that country, while those who remain at home are irritated into believing that these advantages have been greatly exaggerated. Since it is always hard to draw the line in the right place between disparagement of one's own country and other people's it is interesting to compare the report of an institution such as the Boston Psychopathic Hospital with our British mental hospital reports.

The medical director of the Boston Hospital points out that its three main functions are so closely related that any effect on the one must react on the others. These functions are: caring for the mentally and nervously disordered, carrying on continuous research into the causation and treatment of this special form of illness, and providing a training centre for a great variety of workers in this special field—from medical graduates to laboratory assistants. "The fundamental test of the hospital," he says, "is the care and treatment of the individual patient, but satisfactory treatment of the individual sick person is only possible when there is, in addition to the goodwill, sympathy, and conscience of the individual physician, a keen interest in the special medical problems presented by the individual case; not only an interest in recognising what is familiar in the disorder, but curiosity as to the significance of what is unfamiliar and eagerness in the systematic investigation of what is still obscure." He goes on to show that this attitude must necessarily imply vital coöperation with the pathologist, the nurse, the occupational therapist, the psychologist, and the social worker as well as with the patient himself. He summarises a number of cases to show the kind of work that is done and the way in which the artificial barriers which separate so-called mental and other ailments are being steadily broken down. The cases quoted raise problems of the widest possible nature: problems of internal medicine, of the varied endowment of human nature and its varied vulnerability, of the moulding influences in individual life, of the occupational field and conditions of work, of different standards of success and failure, of the organisation of the community, and of the material and cultural satisfaction available for all sorts and conditions of men.

Special reports come from the out-patient department, where 1135 patients were seen during the year; from the chief medical officer, with special reference to X rays and therapeutics, including dental care; from the biochemical laboratory, which emphasises again the impossibility of divorcing psychiatry and internal medicine; from the psychological laboratory, which has a large research output; from the neuropathological laboratory; from the department of therapeutic research; from the syphilis service, from the social service department; from the school of nursing; and from the department of occupational therapy. All these, with ample informative tables, are included in a pamphlet of 50 pages no larger than most of our own mental hospital reports. The result makes us feel that even if psychotherapists in this country have nothing to learn from abroad in their methods or application, they might yet contrive to report their endeavours and successes with more of that infectious enthusiasm which makes for progress.

TUBERCLE IN CHILDREN: A LANCASHIRE STUDY.

MOST authorities are agreed that the diagnosis of pulmonary tuberculosis among children under the age of 15 years is beset with difficulty, a fact which may account for the widely differing statistics of its prevalence. Dr. G. Lissant Cox, in his report for the year 1929 on the prevention and treatment of tuberculosis in the administrative county of Lancaster, points out that the proportion of children (per 1000 of the child population) accepted by the county tuberculosis officers as suffering from pulmonary tuberculosis is very low as compared with that in other counties. In order to test whether many cases of the disease were being missed among the children referred as suspicious cases by practitioners and school medical officers, an investigation was started to ascertain whether any considerable number of these rejected cases were returning later in life with definite disease. This investigation was carried out by listing the consecutive case-sheets of 1545 young adults between the ages of 15 and 25 diagnosed by the tuberculosis officers as suffering from tuberculosis (all forms) during the past three years. It was found that of 1084 young adults coming on the dispensary registers as new pulmonary cases, only 0·64 per cent. had been previously rejected in childhood by the tuberculosis officers. Moreover, of 17,000 children, excluding contacts, referred to the tuberculosis officers between 1928 and 1914, when the Lancashire Dispensary scheme began, some 59 per cent. were diagnosed as non-tuberculous. That this diagnosis was fully justified is evident by the fact that these children did not return in the young adult age to the dispensary as definite cases of pulmonary tuberculosis. These conclusions bear out the findings of Dr. W. Burton Wood, who showed that the children of the dispensaries and sanatoriums are not the children who develop consumption in adolescence, and that a history of "pre-tuberculous" childhood is practically unknown among adolescent consumptives. The close connexion between the number of children taken on the dispensary registers by the tuberculosis officers in a given area and the amount of sanatorium accommodation provided for the treatment of the children has not escaped the notice of Dr. Cox, who draws attention to the fact

[3] U.S. Public Health Service, Bull. No. 38, 1907.

that the very conservative diagnosis in his area of pulmonary tuberculosis in children has meant a small demand on sanatorium beds, with a consequent saving of public money.

RUPTURE OF THE HEART.

A SERIES of 46 cases of spontaneous cardiac rupture has been studied by E. H. Beresford and C. J. C. Earl,[1] who show that it is chiefly a senile catastrophe. In 9 of the 14 cases which were more fully investigated the patient died suddenly, one being found dead in bed. Only one showed any of the classical symptoms of cardiac infarction, yet in all the 14 cases examined histologically the rupture had occurred through the site of a recent infarction. In discussing the actual cause of the rupture, Beresford and Earl stress the frequency with which this lesion is found in hearts showing gross fatty infiltration of the heart wall. From observations of incompletely ruptured hearts they conclude that the muscular contraction of the rest of the heart, the fatty infiltration, and capillary hæmorrhage into the myocardium (as the result of the infarction) are the main adjuvants to the infarction in the mechanism of spontaneous cardiac rupture.

MOTHER AND FŒTUS.

THE substances which are requisite and necessary for growth and development pass readily through the placenta from mother to fœtus. So, in human beings, do more complicated and casual substances, such as antibodies. Much less is known about the possibilities of transference from fœtus to mother, and it is obviously a matter on which exact observation is difficult and experiment hazardous. Suggestions have been made by Dienst and others that the toxæmias of pregnancy, in particular eclampsia, are due to incompatibility between mother and fœtus and the absorption by the mother of something which produces an undesirable reaction. There is but little direct evidence in favour of this view and it is contradictory. Special interest, therefore, attaches to evidence lately brought forward by Dr. Kathleen Edgecombe [2] that antigens may pass from fœtus to mother and rouse an antibody response in the latter. Working in Liverpool with the late Prof. E. E. Glynn she followed the agglutination titres for red cells of a number of pregnant women and finally tested the blood group of the baby, which, as is well known, is often not fully established at birth. With a fœtus with no defined blood group at birth, the titre of the mother's serum showed no change during pregnancy; if the fœtus was of the same group there was some increase in agglutinins, while with a fœtus of a different group there was a large rise. In each case which was tested any increase found during pregnancy passed off and disappeared after childbirth. The natural interpretation of these results is that protein substances capable of acting as antigens may traverse the placenta from fœtus to mother. There is nothing inherently improbable in this, but Dr. Edgecombe is, we believe, the first to bring forward anything like definite evidence that such a transference actually occurs under normal conditions. There are other points in her work which are not so easy to understand. Why, for example, should the titre of the mother's serum rise at all with a fœtus of the same group? More curious still is the fact that the mother's cells become more agglutinable if the agglutinating titre of her serum increases. There is, evidently, room for a good deal of further work.

[1] Beresford, E. H., and Earl, C. J. C.: Quart. Jour. Med., October, 1930, p. 55.

[2] Jour. Path. Bact., 1930, xxxiii., 963.

INFANT FEEDING BY APPETITE.

H. P. Wright and A. K. Geddes[1] point out that the number of different methods of infant feeding which have been used successfully shows that the normal infant will thrive on diets of widely different composition. In Berlin, for instance, the children of protein milk and butterflour enthusiasts flourish side by side. One of the difficulties of artificial feeding is the frequent readjustment of the amount of mixture required, and to overcome this Wright and Geddes use the infant's appetite as regulator. Their exact technique is as follows. All babies are given five four-hourly feeds in the 24 hours and are fed for 20 minutes by the clock. Each baby under three months of age is held while being fed. An ordinary anticolic nipple is used with a fairly large hole so that the child can get as much as it wants in the 24 hours. The formula given is lactic acid whole milk 20 oz., plus 50 per cent. corn syrup 2 oz. When a baby takes 32 oz. of this mixture in the day cereals are offered twice daily, vegetable broth once, and the number of feeds is reduced to four, and when the child is taking two plates of cereal the feeds are reduced to three. Boiled water is offered to all infants between feeds, and cod-liver oil and orange juice are also given daily. It is interesting to note that on this routine an extraordinary variation in intake was found. Cereal feeding was often begun at four months and by six the feeds had been reduced to four in the day. Of 20 children fed in this manner all did well except two, who both suffered from organic disease.

COTTON DUST AND ASTHMA.

A REPORT,[2] issued by the Industrial Health Research Board, on sickness among operatives in Lancashire cotton mills is, as its author states, somewhat elaborate; the intricate analysis of large numbers of statistical tables makes it rather difficult to follow. To temper the wind of mathematics the reader is, however, provided with a useful summary according to the admirable custom now adopted by the Board. Interest lies in the story behind the inquiry as well as in the results, which have been extracted with skill and not without difficulty. As long ago as 1908 a special disease—cotton strippers' asthma—was described by Prof. E. L. Collis, and was attributed by him to dust extracted from raw cotton while it is being prepared for spinning processes. Modern methods (vacuum exhaust appliances) have since been introduced to carry away the dust; but the operatives, while appreciating the great consequent improvement, hold that troublesome dust still remains. This view is not accepted by the employers. Hence the present inquiry to ascertain by reference to sickness records how matters stand. The records used are for the five years 1923 to 1927; and those familiar with the difficulties associated with collecting and then analysing such records must admire the masterly way in which Dr. A. Bradford Hill has tackled the problem. He found that from ages 30 to 59 the operatives concerned suffered over three times as much from sickness due to respiratory causes as did their immediate fellows not employed in the same room. This sickness incidence is due to more men making claims and to more men making

[1] Canad. Med. Assoc. Jour., October, 1930, p. 537.

[2] Sickness amongst Operatives in Lancashire Cotton Spinning Mills. By A. B. Hill. Industrial Health Research Board, Rep. No. 59. 1930. London: H.M. Stationery Office. Pp. 81. 1s. 6d.

repeated claims, rather than to abnormally long periods of respiratory illnesses. Other forms of sickness were not in excess. Men of the ages mentioned must have been employed as youths under the conditions prevailing before exhaust appliances were installed, and so may then have received damage. On the other hand, up to age 30 no excess respiratory sickness was found. This would suggest that modern conditions of work are satisfactory, were it not that some years of exposure to the dust is nearly certainly necessary before the effect of environment can become manifest in sickness-absenteeism. Undoubtedly the extreme conditions of the past no longer exist, and no longer are advanced cases of asthma being produced, but years must yet elapse before the question can finally be answered as to whether exposure to dust and fibre is to-day below the threshold of harm. This report establishes that, by adequate statistical treatment, sickness records can be used to disclose the existence of some occupational hazard, which is in itself no small advance in method; but it also makes apparent how much time must often have to pass before the benefit accruing from some measure of betterment can be demonstrated.

THE PROBLEM OF TRACHOMA.

FOR more than a century the causation of trachoma —or Egyptian ophthalmia, as it was called after it was disseminated among the British garrison in Egypt during the Napoleonic wars—has been one of the standing puzzles in ocular pathology. As is well known, it commences insidiously and runs an extremely chronic course; untreated cases eventually get involvement of the cornea (pannus) and such scarring and contraction of the tissues of the upper eyelids, involving inturned eyelashes, as is irremediable except by operation, and not always by that. The disease is rife throughout the east of Europe, Egypt, and the whole of Asia, and among some of the Indian tribes of North America. It appears to be favoured by conditions of dirt and bad hygiene, and it is undoubtedly contagious. The problem of its pathology, after having eluded the labours of more than one generation of investigators, appeared to have been solved a few years ago at the Rockefeller Institute in New York by Noguchi, who discovered a Gram-negative aerobic bacillus with which he succeeded in infecting chimpanzees with what was acknowledged, even by his critics, to be, at any rate in some cases, true trachoma. More recent investigations have, however, failed to confirm his findings, and experiments are still being carried out at the Rockefeller Institute. The appalling fact is that, taking the world over, there are more people blinded as the result of trachoma than from any other single cause.

In the struggle to cope with the evil the experience of two countries is especially notable: Egypt, where, owing to the liberality of the late Sir Ernest Cassel and the initiative of English ophthalmologists, the ravages of trachoma are being to some extent checked by a system of travelling tent-hospitals; and England, where the problem has never been present except on a comparatively small scale, but in London at any rate, was far more serious 30 years ago than it is now. This improvement is to be attributed to the isolation of infected cases until they are cured. This policy is described by Dr. Francis Lavery in his Montgomery lecture on trachoma in Ireland, an abstract of which appears on p. 1163 of this issue. The extent of the evil in that country seems to be much graver than had been realised, for though among the general population trachoma is less prevalent now than formerly, yet in several institutions under the direct control of a public authority no attempt to prevent the spread of the infection among children has succeeded. This is shocking, and we trust that Dr. Lavery's revelations will prove a spur to the authorities to take action in the direction indicated by him. In civilised countries trachomatous pannus and entropion from inverted lids ought never to be seen, for trachoma is a disease which, if diagnosed in its early stages, and treated efficiently for a sufficient length of time, can be cured without material injury to the sight. In countries where the disease is rife the routine examination of all school-children by oculists skilled in detecting its early signs is the first condition for its eradication.

FOOD FUMIGATION.

PRUSSIC acid is being used not only for ridding ships of rats but for the destruction of insects of various kinds in imported dried fruit and other foods. The absence of any destructive effect on structures and fittings gives it an advantage over most other poisonous gases, and it possesses the further advantage of being easily removed by ventilation. If we knew exactly the extent to which foods of various kinds may absorb hydrogen cyanide, we should then have the answer to the question whether, and in what circumstances, the gas may safely be used for the destruction of vermin and insect pests. A monograph by Dr. G. W. Monier-Williams just issued[1] by the Ministry of Health, collates and discusses the available data. It appears from this very interesting report that of recent years the generation of hydrogen cyanide from potassium or sodium cyanide and sulphuric acid has been abandoned and either the liquefied acid (its boiling point is 25° C.) is used from cylinders or, mixed with a lachrymatory, is absorbed in kieselguhr and stored in sealed tins. A crude calcium cyanide is also used. Foods retain varying amounts of hydrogen cyanide after treatment and part with what is retained at varying rates; retention depends on such factors as moisture content, the nature of the surface, closeness of packing; probably also on the formation of not very stable combinations of some constituents of the food with hydrogen cyanide. Milk, fresh or dried, and dried fruits appear to retain relatively large amounts of the gas; as to cheese some doubt exists. Cooking is likely to decrease the amount retained. Dr. Monier-Williams suggests the need for special care in cases where high concentrations of gas or long exposures are adopted, and he considers 20 parts of hydrogen cyanide per million a reasonable maximum for fumigated food when exposed for sale. He also calls attention to the toxic action of hydrogen cyanide on the respiratory enzymes of plants and its results in the treatment of stored fruit. From the point of view of vitamin retention so closely associated with freshness, he considers caution desirable. Chapter and verse are given for all his conclusions.

WE regret to learn the death of Dr. Ewan Richards Frazer, which occurred on Nov. 15th. His pathological work and generous benefactions to science are well known to the medical profession.

[1] Reports on Public Health and Medical Subjects. No. 60. H.M. Stationery Office. 1930. 6*d*.

MODERN TECHNIQUE IN TREATMENT

A Series of Special Articles, contributed by invitation.

CCCXII.

AFTER-TREATMENT OF SOME COMMON OPERATIONS.*

PART I.

SIMPLE LAPAROTOMIES.

AFTER any operation the aim is to achieve the speediest possible recovery by the simplest and most economical means with the minimum of suffering, and especially to avoid any disability, temporary or permanent, resulting from the operation itself.

One of the most frequent operations is a simple laparotomy without drainage, and I will first mention a few points in the after-treatment of such cases generally.

At the end of a general anæsthetic for laparotomy it is important not to remove, before the patient recovers consciousness, whatever means is in use to keep up a satisfactory air passage through the mouth, and the free escape of saliva and mucus must be provided for by propping the patient on his side with pillows; otherwise he will be partially asphyxiated, he will swallow mucus, and he will gulp in air, all of which conduce to vomiting; and if the patient does vomit, his discomfort is greatly diminished if he is not allowed to lie on his back during this period of semi-consciousness. At this stage it is advisable to give by rectum, in the average case, one drachm of potassium bromide and grs. 40 of aspirin in 5 oz. of water.

After a lengthy or exhausting operation this is followed by a slow drip (at the rate of about a half to three-quarters of a pint an hour) of 3 per cent. glucose in water, and this should be continued for several hours in cases of shock, collapse, or toxæmia, particularly if peritonitis is present. The continuous drip is much better tolerated than intermittent rectal injections and a much larger quantity can be given in less time by the former method. I never order saline solution by rectum, for water is more easily absorbed and less irritating, and the salt possesses no virtue; glucose combats shock, replaces carbohydrate deficiency, and prevents vomiting. Five per cent. glucose may be given with the same object intravenously in quantities from 100 to 1000 c.cm.

Pain.

The stage of restlessness during recovery from general anæsthesia, especially by ether, is inevitable and generally beneficial, for it speeds up the circulation of the lower limbs and diminishes the chance of thrombosis. It is noticeable that though the patient at this stage is restless and excited he is not usually conscious of much actual pain—a fact not always appreciated by the nurse in charge; a little patience, instead of immediate resort to morphia, makes for easier convalescence later on. The use of morphia to combat pain in these early hours can often be avoided if it is realised that the patient can usually be made comfortable by some simple device; almost invariably slight post-operative distension occurs within a few hours, and loosening the binder may be all that is necessary to relieve the patient's discomfort. At the end of an operation the abdominal binder is often applied too firmly, even tightly, and this is quite unnecessary. The lowest fold only should be firmly pinned round the pelvis, the other folds should be fastened loosely enough to allow a hand to be easily inserted under them, for within a short time the abdomen will swell and a tight binder then causes pain and probably conduces to vomiting. Another simple means of relieving abdominal wall tension is to place a high pillow under the knees. After 12 to 24 hours pain from distension often becomes severe; the distension may be masked by contraction of the abdominal muscles, but is detected by percussion of the left lower thorax, for it pushes the diaphragm up. For such pain any relief that morphia gives is very transient; morphia increases distension and so adds to the embarrassment of heart and respiration. A hot fomentation applied all over the abdominal wall relaxes muscular spasm and often gives great relief. For this pain also pituitary extract is most valuable; the dose is 1 c.cm. at all ages except under three years, when ½ c.cm. may be given. Where morphia is given after an abdominal operation one should be cautious as to the dose; gr. ¼ may be correct for a strong, healthy man, but more than gr. ⅛ or gr. ⅙ should not be given to a patient weakened by a severe operation. Heroin I distrust—it sometimes seems to have a specially toxic effect on the heart and there is a tendency to give it in too large doses. The correct dose is about one-third that of morphia in similar circumstances—i.e., gr. 1/24 or gr. 1/18; one must bear in mind that the official maximum dose of heroin is gr. ⅛.

Bowels.

As to the routine treatment of the bowels after a simple laparotomy my practice is to order a simple enema on the second morning, and this is repeated on the fourth and sixth mornings. Aperients during the first week may be dangerous—particularly cascara, infusion of senna, and castor oil; these drugs produce a copious secretion of succus entericus and a powerful contraction, even spasm, of the descending colon. The effect of these actions is sometimes to precipitate rapid and very dangerous distension of the small intestine and right side of the colon, proceeding sometimes to complete and fatal paralysis, especially if plastic peritonitis is present. Even after the first week enemata are often all that is necessary to evacuate the bowel, but some patients object to them; at this stage the most suitable aperients are confectio sennæ, drachms 1 to 2, or mag. sulph., drachms 1 to 2, or the following mixture:—

Extract cascar. liq.	℥ i.
Sod. sulph.	ʒ i.
Liq. ammoniæ	♏ xl.
Aq. chlorof. ad.	ʒ viii.

Dose ʒ ii. – ʒ iv. night and morning.

Sundry Points.

Bed Rests.—After laparotomies it is, of course, routine practice to sit the patients up, but it is not always easy to keep them so. It is not uncommon to see a patient lying on his back with only his head and shoulders propped up with pillows, a most uncomfortable position for anyone troubled with flatulence. He should be raised enough to make the whole trunk almost vertical, and can be kept from slipping if the ends of a firm knee-pillow are tied securely by cords to the bed rest itself.

* The substance of this article was read at the St. Mary's Hospital post-graduate course in October, 1930. Parts II. and III. will appear in future issues of THE LANCET.

In a vertical laparotomy incision the *stitches* must not be removed too early; my practice is to keep the stitches in for 14 days. They may cause some redness at the end of a week, but this fades during the second week as a rule. If infection of the abdominal wall takes place it is an indication to retain stitches in, rather than remove them early, for if they are removed convalescence may be much delayed by the resultant gaping wound, and it is unnecessary. For such infected cases—and they are rare if one carefully packs off and disinfects the abdominal wall while operating—the stitches can be kept in for over a fortnight if boric fomentations are applied.

As to *diet*, except after gastric and duodenal operations, the patient may be encouraged to eat normal food as soon as he will take it, and to drink as much as possible, aiming at five pints a day. To chew and swallow a biscuit or piece of toast will often stop post-anæsthetic vomiting; it empties the salivary glands and moistens and cleans the mouth.

Distension.—A common complication of abdominal operations, especially those on the gall-bladder and in cases of peritonitis, is severe distension and temporary paralysis of the intestines. To begin with, 1 c.cm. of pituitrin is given and half an hour later is followed by a turpentine enema. Meanwhile, hot boric fomentations are applied over the whole abdomen next to the skin; they can do no harm to the wound, however recent. As much fluid as possible is given, preferably by frequent small drinks, but if the patient is vomiting subcutaneous saline should be given continuously. If these methods fail to cause the passage of flatus from the bowel an enema containing two drachms of liquid ox bile in 5 to 8 oz. of water will usually be effective. If the condition continues and vomiting commences one must not wait long before considering the insertion of a small tube into a coil of small intestine; this can be done under local anæsthetic in such a way that the enterostomy closes itself within two or three weeks.

In persistent *post-operative vomiting* the passage of a small stomach tube is of great value and should be used with less hesitation than is customary; the stomach should merely be emptied, for washing it out with such solutions as bicarbonate of soda is uncomfortable and exhausting and of little, if any, value.

Thrombosis of the femoral vein is a troublesome complication of abdominal surgery. Probably the sitting position, with the vein partially obstructed by flexion and sometimes constricted by the lower edge of a binder, is a contributory cause of the clotting, and so also is limitation of the fluid intake. Abdominal cases should be encouraged to move their legs freely, especially for the first few days, and massage of legs and thighs should be carried out. General massage should be commenced during the second week and will minimise the giddiness and weakness that is felt when the patient leaves his bed.

Most laparotomies, of course, necessitate a three weeks' stay in bed, but exception may be made in the case of bronchitic old people, who should be lifted from bed to a chair on the fourth day. At this stage the abdominal wall is safely held by its sutures, and a short time out of bed makes the patient breathe deeply and diminishes the chance of basal pneumonia.

After operations on the intestines there is no need to limit the *diet*, for the consistency of their contents can be little altered. During the first week after an operation on the left side of the colon enemata are contra-indicated; Epsom salts provide the best means of liquefying the fæces here, and may be ordered as soon as the second day.

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SPECIAL ARTICLES

CRIPPLES IN INDUSTRY.

A JOINT Conference arranged by the Invalid Children's Aid Association and the Central Council for the Care of Cripples was held at the Drapers Hall on Nov. 13th and 14th, with the general title of Problems relating to those handicapped by Physical and Psychological Defects. The subject of discussion at the third session was the Physically Disabled—Industrial Outlook, and the chair was taken by Mr. J. J. LAWSON, Parliamentary Secretary to the Ministry of Labour, in the absence of Lord Amulree. Mr. Lawson referred to the King's Roll, established in 1919, under which at present more than 26,000 employers had absorbed some 370,000 disabled ex-Service men into industry. He wished a similar arrangement could be arrived at for absorbing those injured on the industrial battlefield, and he believed that it could be done without penalising the industries concerned. The Ministry of Labour was prepared to support by any means in its power, financial or otherwise, those societies working for the help of cripples.

Dame AGNES HUNT spoke of the training scheme which had been in existence at the orthopædic hospital at Oswestry for three years. In considering the question of employment, cripples must be divided into two categories. The first—those whose disablement did not preclude them from employment in the open labour market, after efficient training—could be largely placed in posts through county orthopædic associations, though there were still districts where no such associations were at work. The second group consisted of people so severely crippled that their chance of employment in the outside world was negligible. The real solution for these cripples was a wide extension of the village settlement system. It was essential for them to be near their work and under medical supervision. For a training college or settlement to compete in the open market an efficient business manager was a necessity; if the capital expenses for hostels, shops, machinery, and living quarters were supplied by Government or the charitable public, a village settlement could reasonably hope to pay its way. Industrial cripples presented an even more difficult problem. The majority of these injured men had wives and families, and fear of being passed for light work—a form of employment which everybody knew was not available—had produced more traumatic neurasthenia than anything else. Common sense dictated that the industrial cripple should be treated under the same ægis as the cripple from disease; if he could be treated in an orthopædic hospital and passed on to a training college or village settlement, he would again become a wage-earning citizen, and would cease to feel that the world had no use for him. Orthopædic hospitals and training schools should employ their own crippled workers as

far as possible, and should keep a record of the subsequent employment of cripples who passed through their hands, as a guide to the best kind of training to be given.

Dr. JOHN F. WARD (Manchester Children's Hospital), speaking on the industrial outlook for the rheumatic child, said that this was really the problem of the child with heart disease, including the child suffering from the effects of chorea. In cases where, though damage had been done to the valves, the muscular walls of the heart were compensating well, the patient was actually improved by suitable occupation, slight exertion being helpful in keeping the heart muscles in good condition. Unfortunately, however, in many cases compensation broke down sooner or later, as insurance companies well knew. Sedentary occupations, such as clerical work, watch-making and repairing, rug-making, and shoe-making were the most suitable, and nothing which involved going up stairs or inclines should be considered. Outdoor employment was not inherently unsuitable, but the majority of outdoor occupations were too strenuous, and there was only a limited demand for such work as poultry farming and bee-keeping, which might be considered appropriate. The industrial outlook for the rheumatic child was not very bright, but it was not hopeless, and there were many cases in which a certain amount of useful work could be undertaken.

Dr. P. C. VARRIER-JONES said that the system of after-care for cripples in this country was one of chaos. There were a number of small schemes here and there trying to force men into industries which would not absorb them. A tuberculous man might be just as truly a cripple as one who had lost a leg or an arm; he was damaged permanently, and industry would not have him. Dr. Varrier-Jones made the practical suggestion that industry should be divided into two grades. First-grade industry would employ normal healthy people, and second-grade industry those who by reason of disablement could only work under special conditions. It was cheaper, as well as more humane, to let people earn part of their living than to keep them doing nothing. Second-grade industry must be efficiently managed, and there must be no waste or overlapping. The consumptive cripple could, in many cases, earn his own wages, but he could not pay a dividend on capital. A great economy had been effected by establishing a single business control for the Papworth and Enham village centres for disabled men. Formerly they were competitors, but now duplication had ceased, with the result that whereas in 1926 Enham's sales had been £12,000 and Papworth's £40,000, in 1929 they were £30,574 and £65,000 respectively. An enlightened system of coöperation was the only line on which a hopeful industrial outlook for the physically disabled could be anticipated.

Mr. J. T. BROWNLIE (ex-President, Amalgamated Engineering Union) said that, from his own experience, he thought the workers would gladly open their ranks to cripples, but the problem was really a question of wages. The trend of industry was towards elimination of waste, conservation of energy, and intensified competition, and it was not reasonable to expect an employer to pay the same rate of wages to a slow and semi-skilled worker as to one who was thoroughly efficient.

Miss DOROTHY WARD (After-care Association for Blind, Deaf, and Crippled Children, London) said that in 1930 1386 cases had been dealt with by the Association, of whom 1202 were cripples or heart cases. The Association had placed 495, 393 had placed themselves, 26 were on trial in various jobs, and 232 were still negotiating. She paid a tribute to the excellent training given to the children in school by London County Council teachers, and especially to those who managed not to allow technical training to interfere with reasonable proficiency in ordinary school subjects.

Miss EVANS (Hostels for Crippled and Invalid Women Workers, Denmark Hill) spoke of work being done among girls and women too badly disabled to obtain employment in the ordinary labour market. The cripples lived in three hostels, all within easy reach of King's College Hospital, besides being under regular supervision from their own medical officer. The workers were divided into wage-earners and non-wage-earners, the former being skilled needlewomen and receiving wages on the piece-work system. Though not self-supporting, they contributed substantially towards the cost of board, lodging, and medical attention. One hostel was reserved for more seriously disabled women; these could never contribute to their maintenance to any considerable extent, but by careful training some were able to produce good needlework which was sold for the benefit of the hostel.

Miss BATT (Council for Cripples, Manchester) said her Council had found it more profitable to train a few cripples in each of a number of trades than to concentrate on one or two types of training. Out of 600 cases investigated by the Council 230 were now working in a great variety of occupations, and this at a time when unemployment was particularly acute in Manchester.

Mr. F. POPPLEWELL (Office of Trade Boards, London) said that Trade Boards had fixed minimum wage rates in 40 trades in Great Britain, these rates being payable under penalty in all cases in which they applied. There was no particular difficulty in connexion with handicapped workers on piece work, but the situation was much more complicated when time workers were under consideration. The Trade Boards had power, however, to grant exemption on certain grounds to time workers incapable of earning the minimum rate by reason of physical disability, and this power was used quite extensively in response to applications, usually with some prescribed conditions.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

THE IMPERFECT CONQUEST OF MALARIA.

THE October number of the *Indian Medical Gazette* compares the results of antimalarial work in various parts of the world, and the comparison is not favourable to India. Not long ago I referred in these columns to malaria in Bombay. The conditions in Calcutta are, on the surface, very similar, and it is remarkable that the disease should be much less prevalent there. The general sanitation of Bombay is certainly no worse than that of Calcutta; *Anopheles stephensi*, which is the principal carrier in Bombay, is ubiquitous in Calcutta, and, in addition, *A. ludlowi*, the great malaria carrier of the Andamans, is breeding profusely in the Sunderbunds, not far from the city. Similar tropical conditions are also present in both cities, and yet malaria is said to be almost absent from the centre of Calcutta, and only lightly endemic in the environs, while it is rampant in the best parts of Bombay, as well as in the crowded bazaars. Apart from the household wells, which are

a conspicuous feature of Bombay, and furnish numerous breeding-grounds, it is difficult to assign a cause for this contrast, especially when it is remembered that breeding of *stephensi* goes on in cisterns, tubs, and water barrels, as well as in wells. A fact which should serve as a stimulus to Indian sanitarians is that malaria has been dealt with successfully on a large scale in other countries which present similar problems. Before the war Palestine was described as one vast malarial incubator, and the British and Indian troops suffered accordingly when they entered the country. Energetic measures were adopted during the period of hostilities, and after the war the campaign was taken up systematically under the auspices of the League of Nations, with the result that malaria now exists in Palestine merely as a minor disease. Reports from Algeria show that in the great plain of the Metidja, formerly a hot-bed of malaria, and in consequence the terror of the early French conquerors and colonists, as it had been before of the early Turks and Romans, similar results have been achieved. Thanks to the labours of the Sergent brothers, underground channels have been constructed, and other necessary measures taken, so that what was formerly an uninhabitable marsh, studded with lakes, is now a fertile area covered with orange groves and fields of wheat. Malaria still exists no doubt—quinine prophylaxis is extensively employed—but only in manageable proportions.

YELLOW FEVER.

The sanitary authorities of eastern countries are evidently still concerned about the possibility of the introduction of yellow fever. It will be remembered that the suggestion was even made some time ago, by a competent authority, that traffic by air between India and countries where the disease is endemic should be prohibited. Attention has now been drawn to the possibility of danger arising from the introduction of yellow fever virus for purposes of experimental study, and it is notified that the Indian Government had prohibited such importation into India, and the Dutch Government has taken the same step for the Dutch East Indies.

DEVADASIS.

While many of the Indian States are conservative in comparison with British India, not only in political but social reforms, some of their rulers, particularly those who have been educated on Western lines, have shown great initiative and a lofty spirit of idealism. The late Begum of Bhopal exercised, in many ways, a beneficent influence in her State. The Maharajah of Gondal (an Edinburgh medical graduate) is noted for his interest in education and public works. Now the Maharanee Regent of Travancore has taken action in a matter which has so far defeated all the efforts of reformers in British India. During a recent tour in her State, the Maharanee happened to visit a temple for worship. On finding that dancing girls were kept there, she issued an order abolishing the practice, and suggesting that in future men should be employed to perform the ceremonial duties.

A CONGRESS HOSPITAL.

Most of the hospitals and colleges started under the auspices of the Indian National Congress have proved to be failures, and students who have relied on them for their education have lived to regret this form of patriotism. On the other hand, the Congress Free Hospital, which came into existence in Bombay in June of the present year, as a kind of by-product of the *satyagraha* campaign, appears to have achieved some measure of success. The main object of its foundation was to give prompt medical relief to those persons who receive injuries in the conflicts between the police and the public in connexion with congress activities. It was originally established in the house of a benevolent *shroff* (jeweller), but has now been extended to 100 beds. Eminent medical men, actuated partly, it is to be feared, by resentment at the withdrawal of recognition of Indian degrees, give their services free, and supplies are furnished by voluntary contribution. The non-medical staff are also volunteers, and patriotic ladies assist in nursing. The ambulance arrangements are extensive. They include five cars, one of which, presented by a minor chief, has been converted from *shikar* purposes. Ayurvedic as well as Western treatment is employed, and large numbers of cases, both in- and out-patients, have been treated.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

ENDOWMENT OF MEDICAL SCHOOLS.

Johns Hopkins Medical School receives two important gifts from recent appropriations of the General Education Board. A half-million dollars goes to the completion of the William Osler medical clinic and of the William Stewart Halstead surgical clinic. The department of medical history, which has already received a million dollar endowment from the Board, is now given in addition $12,500 for each of five years and a capital sum of $250,000, making possible the provision of a larger faculty for the department which, it will be remembered, is under the direction of Dr. William H. Welch. It is announced that Dr. Fielding H. Garrison, who was recently appointed librarian of the W. H. Welch medical library, has also been appointed resident lecturer in the history of medicine. The University of Chicago receives at the same time a million dollars towards the fund—double that amount—needed for the construction, equipment, endowment, and maintenance of two buildings to house respectively the department of hygiene and bacteriology and the department of anatomy.

COST OF INDUSTRIAL MEDICAL SERVICE.

Continuing its inquiry, the Committee on the Costs of Medical Care has examined the industrial medical service of the Endicott Johnson Company, with factories in New York State, employing some 15,000 people. In 1928, the year of the survey, the company had assets of over $26,000,000 and its net sales amounted to nearly 70 million dollars. The medical service originated to meet the requirements of the State Workmen's Compensation laws. In 1916 one full-time physician and one nurse were employed. The service expanded by the desire of the workers. In 1918 the difficulty of distinguishing between those who could and those who could not pay resulted in the decision to extend the service to all employees and to their immediate dependants. In 1928 there were 28 physicians, 4 dentists, 5 dental hygienists, 2 physical therapists, 67 trained nurses, 4 bacteriologists, 4 pharmacists, 17 technicians, and 16 clerks and assistants upon the company's pay roll. The cost of the medical service in that year amounted to nearly 900 million dollars, or $21.81 per person eligible to its service. Only 6 per cent. of those eligible failed to make any use of the service during the year. Half of these used no medical facilities whatever.

SHOULD CANCER BE REPORTABLE?

The proposal of the State of Illinois to add cancer to the list of reportable diseases does not commend itself to the President of the Illinois State Medical Society, who argues[1] that personal cancer is in no sense a public menace. His second objection is based on a presumption that the health department would not guard the list of notified cases from inspection and copying. Should this occur it would be possible for the numerous purveyors of quack cancer "cures" to secure for themselves a long "sucker" list, to use the expressive language of this country.

NOISE ABATEMENT COMMISSION.

After 12 months of research and investigation by otologists, neurologists, engineers, acoustic specialists, lawyers, and others, the report of the New York Noise Abatement Commission has been published. The following observations are selected by *Health News* as the most significant resulting from the Commission's work:—

Hearing is apt to be impaired in those exposed to constant loud noises.

Noise interferes seriously with the efficiency of the worker It lessens attention and makes concentration upon any task difficult.

In the attempt to overcome the effect of noise, great strain is put on the nervous system, leading to neurasthenic and psychasthenic states, and necessitating frequent recuperation in the country to maintain mental efficiency and alertness.

Noise interferes seriously with sleep, even though in some cases it appears that the system is able to adjust itself so that wakefulness does not result.

It is well established that, in addition to other evil effects, the normal development of infants and young children is seriously interfered with by loud noises.

The newspapers coöperated with the Commission by inviting complaints from the public regarding specific noises. The noises most frequently complained of included outdoor loud speakers, steamship whistles, pile-drivers, subway and elevated trains, riveting machines, and automobile horns. The Commission is able to suggest methods by which many of the objectionable noises can be diminished or eliminated, but the extent to which these methods can be applied will depend largely on public interest in the question.

SEX-INCIDENCE OF UNDULANT FEVER.

The element of occupational hazard in the epidemiology of undulant fever is well shown in a recent study of undulant fever in the State of Iowa. Of a total of 375 cases in the State 77 per cent. were in males. Among 186 adults living on farms 87 per cent. of the cases were males. But among 125 patients who had no direct relation with livestock or carcasses 51 per cent. were males. The commonly found disproportion of males in all studies of sex-incidence of this disease is evidently due, not to any greater susceptibility of males to the infection, but to the more frequent exposure of men than of women to the hazards of butchery and the care of stock.

DIPHTHERIA IN NEW YORK.

Immunisations against diphtheria in New York City were increased from 47,500 in 1928 to over 211,000 in 1929. In the first eight months of 1930 there were 216 deaths and 4107 cases less than in the corresponding months of 1928, and 305 deaths and 4458 cases less than the average for the corresponding months during the previous six years.

[1] Illinois Med. Jour., October, 1930, p. 244.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

CLASSIFICATION AND CONTROL OF NOISES.

THE Touring Club of France has published a vade-mecum for the benefit of the citizen who may wish to know the extent to which he may go within the limits of the law in protecting himself against the noise nuisance. It is quite remarkable how much the legal scales are tipped in favour of silence-lovers; they have only to know their rights, and to be willing to exercise them, in order to surround themselves with a zone of comparative silence. The secretary-general of the Touring Club, Mr. André Defert, a barrister, has recently pointed out to a representative of *Excelsior* how the special noise commission of this club was composed of members with expert knowledge of each kind of noise nuisance. The director-general of the State railways assumed responsibility for the noises of this service; a high official of the port of Rouen was the specialist in noises of the sea and rivers. The mayor of Deauville took charge of the noises from which residents of popular resorts suffer most, a high police authority had to deal with traffic noises, and another official had specialised in those noises of which persons living in the neighbourhood of aerodromes complain. Even the noise of church bells and the like had its special expert—a canon. Many people have a subconscious predilection for noise of this kind, and there is said to be something lugubrious about the modern American village from which the sound of church bells has been banished. But as a concession to the late morning sleeper the Angelus will henceforth toll in France at 7 instead of 5 A.M. As for the whistlings of railway engines, they are no longer to be heard on entering every station, at every turn in the line and level crossing, but only in certain cases. Similarly, the pilots who have hitherto found expression for their gaiety of heart in an almost uninterrupted chain of hoots as they pass between river banks lined with would-be sleepers are to be severely rationed. The silencers already imposed on motor-cycles will soon be compulsory for aeroplanes. With regard to the so-called musical instruments, the law as well as popular sentiment is unequivocally on the side of the audience. A mayor has, for example, a right to muzzle at night the calf, donkey, mule, or dog which makes itself objectionable by untimely noises. Even the cock which crows at night is subject to a mayoral interdiction. In the same category may be placed the talking film, the sponsors of which may be forced to take certain precautionary measures when their premises adjoin a dwelling-house. The most important lesson which this vade-mecum drives home is that there already exist effective powers for the control of the noise nuisance; and the public is advised to adopt a bellicose rather than a suppliant attitude towards the authorities. A practical outcome may be the establishment in Paris of a flying brigade of police to be known as the *Brigade du Silence*.

PASSING OF THE *Maisons de Tolérance*.

Another nail in the coffin of the official brothel was hammered home at Grenoble during the Seventeenth National Congress of the Radical and Radical-Socialist party, which adopted unanimously the following resolution proposed by Dr. Hermite and supported by a late Cabinet Minister, Mr. Justin Godart:—

The Congress, being inspired by the resolution adopted by the League of Nations' Committee for the Protection of

Women and Children, considering that its investigations made in the countries adherent to the Pact have enabled it to prove incontestably that 29 great nations which have abolished the traffic in brothels have declared that this abolition has in no way provoked any increase in the incidence of the venereal diseases, has done nothing to injure the public welfare, and has considerably reduced the dangers of the international traffic in women, addresses its congratulations to the municipalities which have closed the brothels, and notably the municipality of Grenoble, and takes note of the achievements, satisfactory from all points of view, thus effected.

The resolution ended with expressing a wish that a general order would be given with a view to the irrevocable suppression in France of the "scandalous trade" in *maisons de tolérance*. However much obscured in the drafting, the meaning of the resolution is perfectly clear: it is death—sooner or later—to the brothel.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

THE HOSPITAL SWEEPSTAKES.

THE first sweepstake promoted on behalf of certain of the Dublin hospitals has proved successful to a degree beyond the hopes of the promoters. When tickets were first issued it was announced that a sum of £25,000 as minimum prize money had been deposited at the Bank of Ireland. As a matter of fact some £400,000 will be distributed in prizes, being 50 per cent. of the gross takings. The hospitals concerned will benefit to the extent of about £130,000, the remainder of the takings going in expenses and promoters' commissions. The hospitals which share in the present sweepstake are: Sir Patrick Dun's, Jervis-street, National Maternity, Children's (Harcourt-street), St. Ultan's, and the Dental. The drawing of tickets took place last Monday in the Mansion House, Dublin, under the supervision of General E. O'Duffy, Commissioner of the Civic Guard. The sweep is on the Manchester November Handicap, which is being run on Nov. 22nd. Meanwhile, arrangements have been made for another sweepstake, to be held on the Grand National Steeplechase next March. It is on a wider scale than the present venture, for 23 hospitals have agreed to participate. They are: Dublin, Jervis-street, Sir Patrick Dun's, Meath, Richmond, Coombe, National Maternity, Children's (Harcourt-street), Linden Convalescent Home, Children's (Temple-street), St. Ultan's, St. Patrick's (Mountjoy-square), Dental; in Cork, North Infirmary, South Infirmary, Erinville, North Fever, Dental; in Limerick, Barrington's, County Infirmary, Bedford Row Maternity; in Waterford, County Infirmary; in Louth, County Infirmary; in Donegal, Shiel. Of the sums to be distributed the Dublin hospitals will receive 64 per cent. and the Cork hospitals 18 per cent.

DEATH OF DR. O. F. McCARTHY.

The death occurred last week, after a short illness, of Dr. Owen McCarthy, resident medical superintendent of the Cork Mental Hospital. Dr. McCarthy had spent the greater part of his professional life in that institution, first as assistant medical officer, and later as medical superintendent. During the war he served in the Royal Army Medical Corps, holding a captain's commission. He was held in high regard by his professional brethren in the South of Ireland, and his tenure of office in the Cork Mental Hospital was marked by many reforms and improvements.

MEDICAL BENEFITS IN NORTHERN IRELAND.

Dr. James Boyd has been appointed medical officer to the Ministry of Labour, N.I., to superintend the working of this scheme. Dr. Boyd is honorary physician to the Royal Gwent Hospital, Newport, Mon.

The Minister of Labour for Northern Ireland has completed the appointments in connexion with the Medical Benefit Council, which is to be set up under the National Insurance Act. The Council is representative of varied interests, and Prof. R. J. Johnstone, M.P., has agreed to act as chairman. The medical men on the Council in addition to the chairman are, Emeritus Prof. T. Sinclair, Dr. David Gray, Dr. W. Lyle, Dr. J. N. McLaughlin, Dr. S. E. A. Acheson, and Dr. J. C. Loughridge.

AUSTRALASIA.

(FROM OUR OWN CORRESPONDENT.)

RAMISECTION IN SPASTIC PARALYSIS.

THE report[1] by Dr. C. P. Symonds and his colleagues on the results of ramisection in six cases of spasticity in children operated on by Dr. N. D. Royle at Queen Mary's Hospital, Carshalton, in 1927, appears to be the final word. There are many in Australia who hold the view expressed in this report, but there are a number—including several surgeons of ability, whose judgment is beyond question—who practise the operation, and claim good results, which they attribute to it. Dr. R. B. Wade, senior surgeon of the Royal Alexandra Hospital for Children, Sydney, who has had an unusual opportunity of studying the effects of the operation, writing on the results of ramisection performed by him on 35 patients suffering from spastic paralysis says:—

"Ramisection has in my hands, I consider, given better results in this class of condition than I have had in the past with tenotomies alone, transplantation of tendons, resections of nerves (Stoeffel's operation), and my experience up to the present convinces me that the operation of ramisection plus tenotomy and re-education should be the operation of choice in cases of spastic paralysis."

The *Medical Journal of Australia*, in its issue of Oct. 11th, 1930, p. 505, devotes an editorial to the subject. It quotes the conclusions of Dr. Wade and Dr. H. R. G. Poate from the *Journal of the College of Surgeons of Australasia* of March, 1930, and also those of Dr. H. le Roy von Lackum of the New York Orthopædic Dispensary and Hospital in the *Journal of the American Medical Association* of Jan. 12th, 1929. It is stated that the operation, beyond doubt, has a certain value, and the editorial questions whether those who made the English report were justified in drawing negative conclusions of such a sweeping nature from a small series. This journal suggests that further assessment of the value of the operation is necessary, and that it would be best to place the matter in the hands of a special committee for investigation in centres where the operation is used. Such a committee should inquire into the condition of patients, both before and after operation, over a period of two or three years. It is felt that it is for the College of Surgeons of Australasia to take further steps.

Apart from the question of the value of the operation in spasticity, considerable attention has lately been directed to the sequel of left lumbar ramisection in Hirschsprung's disease. In this condition the results

[1] THE LANCET, July 19th, p. 127.

of operation are very much easier to assess, and the decision is not complicated by so many other factors as with spasticity. There can be no doubt that symptomatic cures follow the operation in many cases, although surprisingly little improvement is apparent on radiographic examination.

A SOCIETY OF PHYSICAL MEDICINE.

PROPOSED ASSOCIATION WITH THE ROYAL SOCIETY OF MEDICINE.

FOR many years it has been felt that practitioners of physical medicine might usefully unite in a body which could effectively represent their interests and forward their aims. (See THE LANCET, Nov. 1st, p. 980.) On Nov. 14th a society was formed, but its proposed policy did not satisfy a considerable group of those affected, and on Nov. 17th Prof. W. E. Dixon took the chair at a meeting representative both of the newly formed society and of those who dissented from its aims. He outlined the history of the movement and the formation of a body of "biophysical assistants" under the auspices of the Society of Apothecaries of London. It had then, he said, been thought necessary to form a society important enough to control these assistants and, if necessary, to hold an examination. This plan met with much criticism from general physicians, and Lord Dawson had suggested instead the formation of a new section or sections of the Royal Society of Medicine. Against that suggestion stood the objection that the Royal Society of Medicine did not deal with political matters, or with the merits of apparatus or of commercial concerns; it could not form a committee to state the views of any of its sections, nor could it institute an examination.

Lord Dawson, the next speaker, strongly urged the advantages of coöperation with a large and influential body like the Royal Society of Medicine. First and foremost, practitioners of physical medicine needed an organisation for coöperation and the exchange of ideas. The recognition and examination of technical assistants was a matter for the educational bodies, and for recommendations from a society like the Royal Society of Medicine. He assured the meeting that in practice there would be no difficulty about political activity of this kind on the part of the Royal Society of Medicine, and said that if in the future any such difficulty arose, then would be the time to consider the formation of an independent body. The constitution of the Royal Society of Medicine was designed to give the maximum of freedom and independent action to individual sections with all the advantages of coördination and prestige.

Dr. Fortescue Fox, Dr. W. J. O'Donovan, Dr. Albert Eidinow, Sir Leonard Hill, Dr. King Brown, Sir R. Stanton Woods, Dr. Kerr Russell, Dr. Hector Munro, Dr. M. B. Ray, and Dr. C. B. Heald then contributed to a discussion. The necessity for a representative body of physiotherapists in this country was urged from the point of view of international relations and of public health work. The possibility of forming a society and then approaching the Royal Society of Medicine for recognition was adumbrated, and it was agreed that it would be a mistake to form two societies. It was argued that the Council of the Royal Society of Medicine had refused to take any steps in a matter of medical education which had been strongly urged by one of its sections, but it was pointed out, on the other hand, that the Council had allowed the Section of Laryngology to arrange with the Colleges for a diploma in laryngology, and the Section of Obstetrics to appoint witnesses to appear before the Committee on Maternal Mortality. Lord Dawson assured the meeting that a committee of its members would receive sympathetic consideration from the Council.

Sir William Hale-White described the work and constitution of the Association of Physicians, and suggested that, if a society were formed, it should be on those lines.

Lord Dawson suggested the following resolution :—

"That a committee representative of the various aspects of knowledge and of opinions be constituted in order to explore a plan of forming an adequate representation of physiotherapy within the confines of the Royal Society of Medicine."

Several members suggested that the terms of reference were not wide enough, and Lord Dawson therefore proposed as an addition to his motion the words :—

"and, in the event of failure, to explore other avenues."

This proposal was seconded by Dr. Hector Munro and carried unanimously. The meeting instructed Sir Leonard Hill and Prof. Dixon to approach interested parties with a view to forming a committee.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. J. R. A. Clark-Hall is placed on the retd. list.

Surg. Lt. E. C. Johnson is appointed to *Revenge*.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lt. W. P. Elford to be Surg. Lt. Comdr.

Surg. Sub-Lt. C. Seeley to be Surg. Lt.

Proby. Surg. Lts. T. J. Lloyd, R. D. Bradshaw, A. S. Pearson, and E. R. G. Passe to be Surg. Lts.

Surg. Lt. H. A. M. Whitby is appointed to *Ramillies*.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. H. St. M. Carter, half-pay, late R.A.M.C., retires on retd. pay on account of ill-health.

Capts. L. Handy and M. J. Whelton to be Majs.

TERRITORIAL ARMY.

Supernumerary for service with O.T.C. : 2nd Lt. H. A. Raeburn, from Gen. List, T.A., to be Lt., supern. for serv. with Med. Unit, Edin. Univ. Contgt., Sen. Div., O.T.C.

R. F. Phillips (late Cadet, Christ's Hosp Contgt., Jun. Div., O.T.C.), to be Lt. supern. for serv. with Med. Unit, Univ. of Lond. Contgt., Sen. Div., O.T.C.

ROYAL AIR FORCE.

Flying Officer N. M. Jerram is promoted to the rank of Flight Lt.

INDIAN MEDICAL SERVICE.

Lt.-Col. H. W. Illius retires.

DEATHS IN THE SERVICES.

Lt.-Col. Alexander Haldane Stokes, late A.M.S., who died at Bedford on Nov. 13th at the age of 88, graduated in medicine and surgery in the University of Dublin in 1868, and took the doctorate in medicine in the following year, when he received his first commission in the medical department of the Army. In 1881 he saw service in South Africa, was in charge of the base hospital during the Transvaal campaign, and was mentioned in despatches. He also served with the Sudan Expedition of 1885, and was awarded the Suakin medal with clasp and the bronze star. He retired in 1890.

DONATIONS AND BEQUESTS.—The late Lord Brotherton left, among other bequests, £100,000 for the general benefit of the University of Leeds and £20,000 for charitable purposes to the cities of Wakefield, Leeds, and Birmingham respectively.—By the will of the late Dr. Walter Edmunds, of Putney, the Worthing Hospital receives £2000 to provide for four cots.

CORRESPONDENCE

PRACTITIONERS AND THE MENTAL TREATMENT ACT.

To the Editor of THE LANCET.

SIR,—In your issue of Nov. 8th you were good enough to publish the substance of a notice issued by the Board of Control in the following terms:—

"Medical practitioners who desire to be approved by the Board of Control for the purpose of making recommendations in respect of voluntary patients under 16 years of age, Section 1 (3), and temporary patients, Section 5 (3) of the Mental Treatment Act can obtain the necessary form of application by writing to the Board of Control, Caxton House West, Tothill-street, London, S.W., and marking the envelope 'M.T.D.' in the top left-hand corner. As the Act comes into operation on January 1 next, intending applicants should write for this form immediately. The Board cannot entertain applications for approval from medical practitioners of less than five years' standing on the Medical Register."

A similar notice was issued in other journals and newspapers but up to the present a very small number of applications have been received from medical practitioners for approval under the Act. It will, of course, be appreciated that the operation of Sections 1 (3) and 5 (3) of the Mental Treatment Act as from Jan. 1st next will be seriously handicapped unless there is a sufficient number of medical practitioners approved by the Board for the purpose of signing recommendations under those sections. In particular, a temporary patient cannot be received for treatment under Section 5 unless the recommendation has been signed by a medical man who has been approved by the Board of Control for the purpose; and if in any area there are no practitioners so approved, the medical profession may find themselves in difficulty in securing that their patients shall have the advantage of treatment under those provisions.

It is therefore a matter of urgent importance that an adequate number of medical men throughout the country should be approved, if possible, before Jan. 1st next. Medical practitioners seeking approval should write to the Board of Control, Caxton House West, Westminster, S.W.1, for an application form and should mark the envelope "M.T.D." Applications can only be considered from practitioners of at least five years' standing on the Medical Register.

I am, Sir, yours faithfully,

L. G. BROCK,
Nov. 13th, 1930. Chairman, Board of Control.

THE ALKALOIDS OF ERGOT.

To the Editor of THE LANCET.

SIR,—In reply to the communication by S. Smith and G. M. Timmis, which appeared in your issue of Nov. 1st, I would say that in my first letter—THE LANCET of Oct. 18th—I already mentioned sources of ergot of rye containing ergotamine—e.g., Hungary, Czecho-Slovakia, Portugal.

In the first place S. Smith and G. M. Timmis suggested that ergotamine did not exist in ergot of rye. They now suggest that ergotamine may be obtained from ergot of rye, but of not a "normal" infection by *Claviceps purpurea*. I do not follow these authors here. For a man who wishes to prepare ergotamine, the ergot containing this alkaloid is the normal one, since ergotamine possesses all the valuable therapeutic properties of fresh ergot of rye. I can only repeat that the value of ergot of rye depends on various factors as age, source, conservation, &c., and different samples are found to yield respectively ergotamine and no ergotoxine, ergotoxine and no ergotamine, and ergotamine and ergotoxine side by side.

The suggestion of S. Smith and G. M. Timmis that ergotoxine may be converted to ergotamine during the process of manufacture has been made long before without any foundation, and now S. Smith and G. M. Timmis appear to cast doubt on the conclusions of their own work, where they confirmed my previous demonstrations that the two groups of alkaloids are chemically different and that a conversion also by other authors never has been observed.

I wish to repeat here my view that ergotoxine and ergotamine exist preliminarily in ergot of rye, but in varying quantity and varying proportion. We know similar examples of drugs with varying contents of alkaloids—e.g., cortex chinæ and others. As ergotamine loses its capacity to crystallise sooner than its pharmacological activity, insufficiently conserved or stored ergot of rye may occasionally give the impression that ergotamine is wanting, even if amorphous alkaloids are present.

I cannot agree with S. Smith and G. M. Timmis concerning their conclusion drawn from the pharmacological identity of ergotoxine and ergotamine regarding the clinical virtues of the two alkaloids. The clinical comparison cannot be executed but by clinical investigation. Practice has proved in numerous cases the occasionally big differences between pharmacological and clinical experience, especially in actions on the nervous system. Assuming clinical identity of ergotoxine and ergotamine, differences of more technical importance—capacity to crystallise, solubility, stability, &c.—possess great significance.

I am, Sir, yours faithfully,

Basle, Nov. 6th, 1930. Prof. ARTHUR STOLL.

To the Editor of THE LANCET.

SIR,—Having read Prof. Stoll's letter published above may we, in concluding this correspondence as far as we are concerned, briefly summarise our views?

First, there is not the slightest doubt that the four ergot alkaloids are chemically distinct substances. This was one of the chief points in our original paper, and we have written nothing which could suggest that we cast doubt on this conclusion.

Secondly, there is good evidence, chemical, pharmacological, and physical, that the four alkaloids are closely related. The possibility that ergotoxine may be convertible to ergotamine cannot be excluded.

Finally, we have recorded that during our extensive examination of official ergot from all available sources, including specimens from the countries mentioned by Prof. Stoll, we have invariably isolated ergotoxine and ergotinine. In no case have we isolated ergotamine or ergotaminine, although the methods which we employed readily permitted the extraction of ergotamine from the unofficial fescue ergot. We offered a tentative suggestion that rye might occasionally, or possibly regularly in some districts, be infected by a distinct species of *Claviceps* giving rise to ergotamine. We have not found such

an ergot, and the suggestion was only put forward as a possible explanation of the controversy between Prof. Stoll and ourselves.

We are, Sir, yours faithfully,

SYDNEY SMITH.
G. M. TIMMIS.

Wellcome Chemical Works, Dartford, Kent,
Nov. 14th, 1930.

To the Editor of THE LANCET.

SIR,—The correspondence in your issues of Oct. 18th and Nov. 1st between Prof. A. Stoll of the Sandoz Works, Basle, and Drs. Smith and Timmis of the Wellcome Chemical Works, may appear to be chiefly of interest to chemists and pharmacists. So far as it concerns the obscure chemical relationship between the alkaloids ergotoxine and ergotamine, and the botanical identity of the ergots yielding them, that may well be the case. Ergotoxine was isolated and characterised by Barger and Carr in 1906, and simultaneously described as hydroergotinine by Kraft, while the description of ergotamine by Stoll and Spiro followed some 15 years later (1921). I was able to show with Spiro that the action of the two is absolutely identical, and there remained even some doubt as to whether they might not be the same substance. The fact that they are chemically different seems to have been settled by the recent paper by Smith and Timmis; these authors, however, raised a new point, in stating that they always obtained ergotoxine from the official ergot of rye, and always ergotamine from the ergot of a wild grass (Festuca). This gave the impression, reflected in an annotation in THE LANCET of Sept. 20th (p. 652), that ergotamine was the product of unofficial ergots. Prof. Stoll denies this, and Drs. Smith and Timmis seem puzzled by the discrepancy between his statement and their own experience, and ask for further information. These questions can safely be left to the chemists and pharmacists for investigation and settlement.

There is, however, another problem arising from Prof. Stoll's letter, which has a directly medical importance. I am inclined to believe, indeed, that its importance is much wider than that of any question concerning ergot. Prof. Stoll is concerned to defend "the importance of ergotamine as the active principle of official ergot of rye." From THE LANCET'S suggestion, that ergotamine is the product of an unofficial ergot, he is, on the facts presented by him, perfectly entitled to defend its claim to be *an* active principle of the official drug. His use of the definite article, however, is apparently intentional; for, in the same connexion, he states that "hundreds of experimental and clinical workers have shown that ergotamine possesses all the specific properties of official ergot. As yet no such clinical literature exists on ergotoxine. While in 1923 the British Pharmaceutical Codex still denied recognition to ergotoxine as a clinically efficient active principle of ergot, ergotamine already possessed extensive clinical literature," &c. The implication appears to be that ergotoxine, though pharmacologically identical, has failed as a practical therapeutic agent where ergotamine has succeeded, and that the latter, accordingly, is *the* active principle.

So far as they are concerned with matters of fact, it is impossible to question the accuracy of the statements quoted above from Prof. Stoll's letter. It is a fact that he can cite abundant and accurately recorded clinical observations to show that ergotamine does what is required of ergot in practice; it is a fact that no such records can be found for ergotoxine; and it is natural for him to quote the statement in the Codex as an authoritative summary of experience. Prof. Stoll cannot reasonably be blamed for using these facts for his own purpose. The actual statement in the Codex is as follows: "Ergotoxine has been used clinically for its action on the uterus, but it is disappointing and gynæcologists are now generally agreed that it is not the active constituent they want." A foreign reader, such as Prof. Stoll, would naturally imagine that a number of representative gynæcologists had met to discuss the results of trials scientifically conducted in their clinics, and had agreed upon this important conclusion. It would be difficult for him to suppose that, though ergotoxine had been known for about 15 years before he found ergotamine, it had, in fact, never received a proper clinical trial in the country of its origin; or that such a statement as that in the Codex could be based on a casual impression. These, however, are the curious and rather humiliating facts. Ergotoxine, described in England in 1906, has not to this day received a proper clinical trial; ergotamine, described in Switzerland in 1921, and identical in action with ergotoxine, according to laboratory tests, was promptly and adequately studied in the Swiss and German clinics. As a result, the long outstanding question, whether the specific alkaloids were responsible for the clinically desirable actions of ergot, was answered decisively and in a positive sense. That question could have been answered at any date after 1906, and until 1921 the knowledge and the material needed for its study were most easily available in England. It was not merely that nothing effective was done; what was said was worse than nothing, in that it was misleading to anybody who took it seriously. Those who, being scientifically interested, pressed for clinical trials which could give a definite answer, became all too familiar with the assurance that "clinical experience" had found the Liquid Extract (B.P.) "satisfactory"; so that, as this extract contained practically no alkaloid, the alkaloid was clearly not required clinically, however interesting its intense and unique activity might be to the laboratory worker.

It may be presumed that this was the kind of evidence on which the Codex based its dismissal of ergotoxine; at any rate, I know of no other on which it could have been based. I should, however, in justice to British obstetrics, acknowledge that, when this fundamental question had been practically settled abroad, Mr. Aleck Bourne, in alliance with my former colleague, Dr. Burn, produced by far the most elegant and convincing demonstration of the fact that the clinical action of ergot is due to the specific alkaloids. Since, however, Burn and Bourne used only ergotamine for their clinical experiments, they added yet another to the published records, which have made it plausible for Prof. Stoll to suggest that he discovered, not merely a slightly different alkaloid with the same action as the long-known ergotoxine, but the long-sought active principle of ergot.

I do not regard this case of ergot and its alkaloids as having much importance in itself. The question which really interested me—namely, whether ergot owed its value to its peculiar alkaloids or to some unspecific constituent—has been settled at last. I am now almost completely indifferent as to whether ergotoxine or ergotamine is used in practice; the action of both is that which I originally described for ergotoxine, and I had the pleasant privilege of coöperating in the pharmacological investigation of ergotamine as well. I should merely like to see the pioneer work of my chemical colleagues of 24 years ago

receive its proper share of recognition. If I am correctly informed, the present position is that British gynæcologists, having shown no real interest in ergotoxine or inclination to study and describe its action, are exhibiting a polite readiness to try ergotamine, and even, perhaps, to adopt it in their practice, now that careful descriptions of its action have been published by their continental colleagues. The case happens to be one of which the details are familiar to me, but I find no reason for supposing that it is the only one of its kind. It probably furnishes only a rather striking illustration of a general reluctance, of medical men in this country, to undertake clinical trials of anything new, under the conditions of scientific control needed to make the results worthy of record. Detailed discussion of the possible causes of this attitude is beyond the scope of this letter. Has it any affinity with the artistic timidity which provides a readier hearing, in his own country, for the British musician who disguises his name and his origin? How far is it due to an entirely honourable concern, lest clinical opportunity should be exploited for some private, proprietary interest? If that is the difficulty, it is hardly met by a tame receptiveness for what is done elsewhere, which merely gives a free hand to foreign interests. How far, on the other hand, is the attitude merely a symptom of a condition affecting clinical research of every kind in this country—a condition of which the ætiology and treatment have recently been brought under active discussion? Whatever the cause, the position is a serious one for the progress of therapeutic science in this country.

I am, Sir, yours faithfully,

H. H. DALE.

National Institute for Medical Research, Hampstead, London, N.W., Nov. 17th, 1930.

P.S.—You have kindly allowed me to see the further letters which are to appear in the same issue with this. Your readers will, no doubt, agree with Prof. Stoll that identity of clinical action can only be strictly proved by comparative clinical trials. On the other hand, when exhaustive tests in various laboratories, including those of Prof. Stoll's firm, have established a very strong presumption of complete identity in action between two alkaloids, the fact that clinical records exist for the action of only one of them does not weaken that presumption.

ELECTRO-SURGERY.

To the Editor of THE LANCET.

SIR,—I should also like to protest at the views expressed in your leading article of Nov. 1st. In my opinion, electro-surgery in this country has developed very considerably, and from my own observations abroad there are operators here whose technique and ability are in no way inferior. As one example may I mention the great experience of Mr. Sampson Handley in this direction. There are many others skilful in as many directions. Dr. Cumberbatch has done a world service in the development of diathermy technique. The reference to apparatus is unfortunate. British diathermy machines of to-day are quite satisfactory, and have as standard the multiple tungsten gap your article refers to. In the enucleation of tonsils, I have had the opportunity of testing the hæmostatic properties of diathermy.[1] I use British diathermy machines as I have found none better.

I am, Sir, yours faithfully,

Putney Hill, S.W., Nov. 12th, 1930. WARNER COLLINS.

[1] THE LANCET, 1930, i., 859.

A PLEA FOR MORE CAREFUL TONSILLECTOMY.

To the Editor of THE LANCET.

SIR,—During the last few years I have had to examine the throats of very many school-children in the L.C.C. area. This has shown to me the large number of cases in which the operation of tonsillectomy has been inefficiently performed. It is essential to draw attention to the fact and, as it is better to have figures to support statements, I have noted the results of the operation in 100 consecutive cases I have examined. Here is an analysis of results:—

Of the 100 cases, 47 had their tonsils cleanly and satisfactorily removed, 49 had tonsillar remains, and four had the tonsils removed cleanly but the palate grossly scarred and deformed. (By tonsillar remains I do not mean a small tag of lymphoid tissue adhering to the base of the tongue, but a large part of the tonsil left behind—anything from a quarter of the tonsil to the whole of it.)

I have classified the results in the table given below showing the places where the operations were done.

Place of operation.	Total cases.	Cleanly removed.	With tonsillar remains.	With deformed palate.
Voluntary teaching hosp. ..	14	4	10	0
Voluntary non-teaching hosp.	47	24	22	1
L.C.C. clinics	35	19	13	3
By private operation	3	0	3	0
Place of operation unknown.	1	0	1	0
Total	100	47	49	4

From my observations over a number of years, I am confident that a similar series would show similar results. It is not my purpose to decry the work of my colleagues as I am not at all sure that better work could be done by any individual under the existing circumstances. It is rather my aim to bring the facts vividly before medical men, so that an examination may be made into the methods which produce such very bad results.

It should be noted in the first place that there is no substantial difference in the results obtained in voluntary hospitals and those obtained elsewhere. I hold no brief for any special method of tonsillectomy. Every man tends to evolve his own technique, but it appears to me that there are three essential requirements to obtain a high percentage of successful tonsillectomies, and that the present poor results are due to a neglect of one or more of these requirements.

The first and most essential point is the administration of a continuous anæsthetic which gives the operator plenty of time and ensures relaxation of the parts. In this way it is possible to cope with the difficult as well as with the easy cases.

The second point is that the operator must have a means of illuminating the fauces efficiently. It is not possible to remove tonsils while groping in the dark.

The third point is that there must be an efficient method of hæmostasis, as it is impossible to make sure that the tonsils have been completely removed until all bleeding has been stopped and the fossæ examined at leisure.

With regard to the high percentage of failures in cases operated on in the voluntary teaching hospitals (as shown in my small number of cases) no one doubts the personal efficiency of the surgeons of the departments. If they themselves performed all the operations the failures would be few. It is the necessity for teaching junior men the job that leads to the non-success of the operation. Young men must be trained but the patient should not be made to suffer in the process. A continuous anæsthetic, therefore, is all

the more essential so that the supervising expert can take over from the novice if necessary.

I am aware that the routine adoption of my three essential points would lengthen considerably the average time of operation, but perhaps not to the extent that might be expected. In children I find it possible, with trained assistance, to remove tonsils by dissection under ether anæsthesia, up to six cases in an hour. In any case present-day results are so bad that modifications in technique will have to be introduced, let these modifications lead where they may.

I am, Sir, yours faithfully,

J. D. McLAGGAN.

Wimpole-street, Cavendish-square, W., Nov. 14th, 1930.

THE CHARTERHOUSE RHEUMATISM CLINIC.

To the Editor of THE LANCET.

SIR,—The clinic was first opened in October, 1928. Treatment is entirely free, and consists of weekly injections of stock vaccine.[1] During the first two years rather more than 500 patients attended, suffering from rheumatoid arthritis, osteoarthritis, fibrositis, lumbago, sciatica, and other forms of chronic rheumatic disease. No case, however crippled, who could be brought up the stairs, has been refused. An attempt has been made to follow up all those who have ceased their treatment, and to these—195 in number—letters were sent out. 111 answers were received. As 17 were returned through the dead-letter office, 62 per cent. of the patients replied. Those under treatment—176 in number—who had attended for more than a fortnight, were instructed to reply to a questionaire.

The results were then tabulated under three headings: Great improvement, including "cure," Definite benefit, No benefit. An analysis of the replies received from those discharged as "cured," or no longer attending, yields the following results :—

Class 1.	Class 2.	Class 3.	Total.
Great improvement, including cure.	Definite benefit.	No benefit.	
43 (38·73 %)	43 (38·73 %)	25 (22·5 %)	111

Total of Classes 1 and 2, 77·4 % ; Class 3, 22·5 %.

Class 1.—Of those "cured" or greatly relieved there were 14 cases of osteoarthritis, 15 cases of fibrositis, and 14 cases of other rheumatic conditions. The average number of attendances in weeks of the cases of osteoarthritis in this class was 20·4 (maximum figures being 44 and 38), of the fibrositic group 11·4, and of others 10·4.

Class 2.—There were 13 cases of osteoarthritis in this class, with an average attendance in weeks of 16·7 ; fibrositis 6, with an average weekly attendance of 17 ; and of other cases 12, with an average attendance of 7 weeks.

Class 3.—The average attendance of all types in this unsuccessful group was 11·2 weeks. From many of the replies received in this group and from a study of the records of the case cards, it would appear that the occurrence of reactions, general and focal, which had not always been revealed by the patient while under treatment, had in many cases acted as a deterrent to persistence with the treatment.

A similar analysis of the opinions of patients under treatment yields the following result :—

Class 1.	Class 2.	Class 3.	Total.
91 (52·7 %)	69 (39·77 %)	16 (9·65 %)	176

It was realised in conducting this part of the investigation that the veracity of these opinions might be vitiated by a possible tendency of patients under treatment to exaggerate, out of gratitude or from a sense of obligation, the benefit experienced. With this possible fallacy in mind, these opinions were collected with a careful avoidance of leading questions, combined with a certain amount of cross-examination to elicit specific reasons for the alleged improvement, when such was not spontaneously given. Such reasons, for example, as "can now kneel," or "can now go up and down stairs," or "can now walk without a stick," were frequent and striking.

Combining the figures obtained by the postal and personal questionaires, the following figures emerge :—

Class 1.	Class 2.	Class 3.	Total.
134 (46·68 %)	112 (39 %)	41 (14·2 %)	287.

Total of Classes 1 and 2, 85·7 % in 287 cases.

It might be urged that those who had failed to reply had received no benefit and were reluctant to state this, and that their total should be added to those of Class 3 in the above calculation. It appears, however, that laziness or inertia would probably account for a substantial proportion of the missing opinions, for an examination of the case cards, and our recollection of the condition of the patients when last seen, indicates that a considerable number of them had received appreciable, and in many cases substantial relief.[2] We are satisfied that not all of those who failed to reply can be fairly charged to Class 3 of the account, but even if they were, the figures would stand as follows :—

Classes 1 and 2.	Class 3.	Total.
246 (65 %)	108 (35 %)	354

It would appear, therefore, that some number lying between 65 and 85, and nearer the larger number than the smaller one, represents the percentage of those who have undergone treatment and benefited thereby. A conservative estimate of this number would be 75 per cent., and we suggest that it is no overstatement of our case to advance the claim that three-quarters of those who have been under treatment at the Charterhouse Rheumatism Clinic have improved. We would like here to express our great appreciation of the courtesy of the Charterhouse Mission in Southwark, whose club room has so kindly been placed at our disposal for four afternoons a week.

In conclusion, it is our considered opinion that the method of treatment of the chronic rheumatic diseases by stock vaccine as used at the Charterhouse Rheumatism Clinic is one from which patients may be expected to obtain definite benefit. It is one upon which further detailed clinical research is

[1] The technique and the vaccine used is that described in the Handbook of the Vaccine Treatment of Chronic Rheumatic Diseases, Oxford Medical Publications, 1930.

[2] Several replies, which came in too late to be included, come under Class 1 or 2.

desirable, and since the method is suitable for the general practitioner to use in his own surgery, he should take an important part in any such investigation. We suggest that stock vaccine treatment could thus be applied on a large scale in the routine treatment of rheumatic patients, nor can we see any reason why it should not meet with a success equal to that here recorded.

We are, Sir, yours faithfully,

H. WARREN CROWE,
T. C. MCCOMBIE YOUNG,
FRANCIS BACH.

Nov. 13th, 1930.

PARAPLEGIA IN HODGKIN'S DISEASE.

To the Editor of THE LANCET.

SIR,—In the clinical note on the above subject published in your columns on Oct. 25th we overlooked by inadvertence an interesting clinical case showing similar symptoms which was also published in THE LANCET (1927, ii., 807) by C. F. T. East and R. C. Lightwood. We are pleased to repair this omission.

We are, Sir, yours faithfully,

F. JOHN POYNTON,
KENNETH E. HARRIS.

Harley-street, W., Nov. 18th.

PANEL AND CONTRACT PRACTICE

Maintenance of Efficiency.

IN his recent report on the state of the public health, Sir George Newman points out that, with two exceptions, the work of insurance practitioners is not subject to inspection of any kind. The exceptions, of course, are records and prescriptions. Yet, he adds, it would seem at first sight that the service is one in which some form of supervision is specially needed. It is not constituted by the appointment from a number of candidates of officers selected on account of their peculiar fitness for the work; on the contrary, any registered medical practitioner (other than one whose name has been removed from the medical list by the Minister) may exercise his statutory right to undertake the treatment of insured persons. How, then, is the efficiency of the service maintained? What steps are taken to ensure that insured persons receive proper treatment from their insurance practitioners?

The answers to these questions have been given in previous annual reports of the C.M.O., Ministry of Health, but he recapitulates them briefly:—

"First, reliance is placed on the natural tendency of the doctor to do his best for his patient. This, in my view, is an important consideration. Quite apart from the purely professional feeling of repugnance to inferior work, which is as strong among doctors as among members of other professions, there is between doctor and patient a relation of a very special kind. A patient is a person in distress, and the natural tendency of mankind is to relieve distress. A doctor is a person trained to give such relief, and it would be strange indeed if he required any outside prompting to induce him to do his best to give it. His relation to his patient is one that makes for an attitude of sympathy and mutual consideration. As a rule, patients are considerate to their doctors, and do not make unnecessary demands upon them. As a rule, doctors do their best for their patients. There are, of course, exceptions to both rules, but as I see the position they are few and far between.

"Secondly, the patient is free to choose his doctor, and if he loses confidence in the doctor of his choice he can make a change and choose another doctor. The change can take place at once if both the doctors concerned agree; and even if the first doctor refuses his consent to the change the insured person can effect it by giving 14 days' notice to the insurance committee. In insurance practice, as in other walks of professional life, a reputation for incompetence, carelessness, or neglect will result sooner or later in a reduction of clientèle.

"Thirdly, if an insured person thinks he has not received proper medical care from his doctor he may not only transfer his name to the list of another doctor but he may bring the grounds of his dissatisfaction to the notice of the insurance committee, who must then refer the matter to a subcommittee specially constituted to investigate such complaints. If the result of the investigation is considered by the insured person to be unsatisfactory it is open to him to appeal to the Minister."

Such, says Sir George, are the influences tending to maintain the efficiency of the insurance medical service, and (from the figures given in the report) it will, he thinks, be agreed that they are attended with considerable success.

"SOMETHING WRONG WITH CERTIFICATION."

Later in the same report Sir George Newman sets out the results of a special investigation into 81,375 cases referred during the year 1929 by approved societies to the regional medical staff, with an analysis of the proportion referred who ceased to draw benefit. It is difficult, he says, to resist the conclusion that in many of these cases a final certificate ought to have been issued at an earlier date, and that the societies may be compelled, for the protection of their funds, to refer, at an earlier stage of illness, cases normally producing only a short period of incapacity. In commenting on this passage, the *National Insurance Gazette*, while recording its belief that there is at least as high a percentage of honest men in the medical profession as in any other, holds that the point of view of certifying doctors needs further consideration.

"The average doctor takes the view that his patient engages him and that his sole duty is owed to that patient. That is the doctor's traditional attitude, and it was entirely correct in former times. It is only partly correct under the National Health Insurance system. The first part of the proposition is true, but the second part is not. The patient engages the doctor, but the whole body of insured persons pays the doctor's fees, and therefore a duty is owed to that body. The individual patient does not pay the doctor's bill. The whole body pays, and we put it to the doctors, as honest men, that a duty is owed to that body."

"In whimsical moments," the *Gazette* concludes, "it has struck us that an inscribed sheet of blotting-paper might be fixed in books of certificates, the inscription reading: 'I also owe a duty to the body which pays my bills.'"

Efficient Rural Service.

M.A., M.R.C.S. (Cumberland) writes: "Rural Panel, in his excellent but too short article, has forgotten one item—namely, the motor-car—which brings men out of the towns to those patients who think that a brass plate in a town means a more clever or capable practitioner. It is not difficult for a man with a large town panel to leave his work to an assistant, whilst he (the principal) is not only keen on augmenting his numbers and getting the mileage grant, but also uses these means to acquire private patients as well in the country.

"The country doctor cannot retaliate, for his mileage is already more than he can get through in a day without an assistant; and what real country doctor can afford to run an assistant or even a dispenser? There is now no 'fat to fry the lean.' The fat have migrated to the towns, leaving their ancestral halls tenantless. The lean are rapidly doing the same, some returning poorer than when they went, the town panel doctor following them up.

"The 'obvious advantages of a stable population' are rapidly becoming a thing of the past from the medical point of view."

PUBLIC HEALTH SERVICES

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are 1929 statistics of three cities:—

Name of city and estimated (R.-G.) mid-year population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 live births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and neonatal mortality.	Young child (1–5 yr.) mortality.	Maternal mortality in childbirth.
Manchester.. (770,655)	16·9	15·3	1·40	1·47	4·1	2·0	97/37*	54	4·4
Newcastle-upon-Tyne (283,400)	18·1	13·8	1·35	1·37	2·6	2·3	85/40	50	5·8
Leicester .. (245,200)	15·3	13·9	1·30	1·45	3·5	1·8	80/32	45	5·3

Stillbirths per 100 live births: Manchester 5·8, Newcastle 6·4, Leicester (buried in the city cemeteries) 7·3.

* Among the 12,472 births in the districts covered by the health visitors. The total births were 13,032.

Manchester.

Dr. R. Veitch Clark says that in comparison with 1928 the birth-rate showed an increase of 0·11 and the death-rate an increase of 2·41. The chief causes of the increased death-rate were influenza, pneumonia, and bronchitis during February and March. Small-pox was introduced on four separate occasions. In all there were seven cases of the mild type and one of the confluent hæmorrhagic type, which proved fatal within seven days of onset. The fatal case was that of a male passenger, aged 34, on s.s. *Tuscania*. There were 761 cases of diphtheria, with 59 deaths, giving the high case-fatality of 7·8 per cent. Swabs were taken from the throats and noses of 1013 contacts and 50, or 4·9 per cent., were found to be harbouring the diphtheria bacillus. Most of these were admitted to Monsall Hospital and kept under observation until three successive swabs proved negative. In order to guard against unnecessary isolation virulence tests were carried out in 38 cases, with 21 positive and 17 negative results. Under the immunisation scheme, approved in June, 1928, about 3000 children were immunised. The diphtheria cases admitted to hospital were of a severer type than in the previous year, and many were admitted at a late stage. Seventeen of the 50 deaths in hospital occurred within 48 hours of admission. In order to cope with severe cases admitted late the intravenous administration of serum was adopted, with good results. With the consent of the parents, patients admitted for diphtheria were immunised against scarlet fever, and patients admitted for scarlet fever were immunised against diphtheria. Among about 1900 cases of scarlet fever admitted to hospital 500 were treated with serum. Dr. D. Sage Sutherland considered that the most marked reduction in complications among the serum-treated cases was in respect of adenitis, glandular disease, and nephritis, and that rhinorrhœa and otorrhœa showed little alteration.

There were 38 cases of enteric fever, 24 infected by *B. typhosus* and 14 by *B. paratyphosus*. In three of the typhoid cases mussels from layings known to be liable to pollution were thought to be the cause, and the dealers in Manchester have agreed not to market these mussels in future. All specimens of blood examined for the Widal reaction were also examined, but with negative results, for *Brucella abortus*. There were 37 confirmed notifications of encephalitis lethargica, in 10 of which the illness began in 1927, in 3 in 1928, and in 24 in 1929. The deaths numbered 24, seven being those of persons notified in previous years. Children suffering from after-effects are provided for at Swinton Home and adults at one of the municipal hospitals. The scheme for the provision of additional special institutional accommodation has been held in abeyance in view of the Local Government Act, 1929. The new cases of syphilis treated during 1929 were 1297 and of gonorrhœa 1768, to be compared with 1323 and 1683 in 1928. The number of defaulters remains about constant and approaches one-fourth of the total. In order to stimulate resumption of treatment letters were sent to over 2000 defaulters. From about half there was no reply; in 4·4 per cent. wrong addresses had been given, and in 20·2 per cent. the patient returned and attended satisfactorily. The new irrigation cubicles at St. Luke's Hospital have been greatly appreciated.

Dr. D. P. Sutherland, tuberculosis officer, reviews the results of artificial pneumothorax treatment begun in 1913 on a few cases at Abergele Sanatorium. Up to the present there have been 112 completed cases which have been under subsequent observation for six years. Dr. Sutherland finds that from 2·5 to 4 per cent. of all institutional cases in Manchester may be suitable. After six years about half the patients are dead, but the operation restores working capacity, reduces infectivity by the diminution or abolition of tubercle bacilli in the sputum, and limits the need for prolonged institutional care. Dr. H. G. Trayer says the post-mortem records for the past eight years at Baguley Sanatorium indicate a definite increase in the incidence of primary carcinoma of the lung, usually originating from a bronchus. Among 55 cases admitted for observation there were eight deaths, all of males. Two were due to pulmonary tuberculosis, five to carcinoma of the lung, and one to lymphadenoma. Dr. Trayer finds that in pulmonary neoplasm an initial hæmoptysis is twice as frequent and pleural effusion much more common. The incidence is higher in males than in females. In reporting on the work of the Manchester Cancer Committee, Dr. Clark mentions that two of the largest oil companies have sent their medical and scientific directors to investigate the work and give assistance. The Anglo-Persian Oil Company have sent one of their research chemists to Manchester to assist in the investigation of the cancer-producing properties of mineral oil and tar, and the Shell-Mex Oil Company are providing mineral oils in forms which the Committee's scientific staff desire to test, and sending crude oils from supplies in all parts of the world. The Committee has enlarged its scientific staff in order to expedite the investigation of the problem of mule-spinners' cancer. Particulars are given of the progress made during the year in the determination of the chemical composition of carcinogenic compounds.

The Regional Smoke Abatement Committee has a membership of 72 out of 102 authorities within a radius of 15 miles of Manchester. The Federation of British Industries has appointed a direct representative on the Committee. Much propaganda work, including courses of lectures at the College of Technology, has been carried out and efforts made to encourage the manufacture and use of smokeless fuels for domestic purposes. The Committee is at present only advisory and the question is again to be raised of its being constituted a statutory body. Lieut.-Colonel J. W. Brittlebank, M.R.C.V.S., reports that of 697 samples of country milk 12·6 per cent. were tuberculous. This is better than last year, when the percentage was 17·6. No great improvement can be expected, he says, until routine veterinary inspection is adopted. Among the 950 cows stalled in the city, three cases of tuberculosis of the udder were detected by veterinary inspection.

Newcastle-upon-Tyne.

Dr. Harold Kerr says the sunshine records at Armstrong College were 1211 hours, as compared with 1169 in the previous year, whilst at Cockle Park, near Morpeth, they were 1566 compared with a previous 1406. The city, therefore, lost one-fourth of the district sunshine. The atmospheric pollution gauges recorded a deposit of 1117 tons per square mile in the City-road, as compared with 839 in the previous year. This record is easily the worst in the country and is due to the grit and solid matter from the tramway's power station chimney. This gauge was moved to a similar industrial area in the St. Laurence district, where a deposit of only 340 tons was recorded. The tar deposit in City-road was 58 tons, as compared with 4 in St. Laurence, whilst the tar deposited in the residential district of West Gate Hill was 7 tons. The City-road gauge thus indicates excessive deposit and grossly incomplete combustion. The furnaces are overloaded and a powerful forced draught has been installed. Unfortunately the Electricity Board are about to move their plant to the tramways power station and there is no likelihood of the City-road nuisance being remedied for the next year or so. The use of smokeless fuel for domestic purposes is slowly increasing in Newcastle. Dr. Kerr has himself adopted coke fires with gas burners below the grate to light them and finds the method cleaner, less troublesome, and more efficient than with raw coal. He has also found a 10 per cent. reduction in the cost of gas and fuel without taking count of kindling wood.

Dr. Kerr submits a preliminary memorandum with a scheme for taking over Wingrove (poor-law) Hospital and bringing it up to date, but only in complete coöperation with the representatives of the voluntary hospitals.

The death-rate was only 0·7 up in spite of the influenza epidemic which was at its worst in the second half of February, but cleared up with the fine bright weather in the first week of March. There were 128 deaths from influenza; and respiratory diseases caused 15 per cent. of all deaths, as compared with 13 per cent. in 1928. There were 217 male deaths from cancer and 172 female, thus reversing the usual sex-incidence. Diphtheria was more severe and the case-fatality rose from 3·1 to 5·4 per cent. No immunisation scheme is in operation, but children admitted to the City Hospital for other complaints are immunised with the consent of their parents. There were two small defined outbreaks of enteric fever, one of 12 cases in February, which affected the surgical wards of the Royal Victoria Infirmary and caused one severe case in a nurse. Protection of the staff by inoculation, which has been for long a routine procedure of the City Hospital, has now been adopted at the Royal Victoria Infirmary. The other small typhoid outbreak included five cases with two deaths and originated from mussels gathered in the River Blyth. Dysentery was proved bacteriologically in 123 persons, ten belonging to outside areas, and there were four deaths. Dr. J. A. Charles, deputy medical officer of health, as the result of studying the history of dysentery in Newcastle, concludes that during the eighteenth century Newcastle was a veritable hotbed for it, whilst in the nineteenth century it appeared frequently in the records of the Newcastle Dispensary. The present outbreak which has gone on for two years is therefore a recurrence. It seldom occurs in infants under one year, is commonest in children from 1 to 2, most dangerous at the age-period 5 to 15, and the incidence and severity are greater for boys than girls.

At the venereal diseases clinic 38 per cent. of patients ceased attendance before the completion of treatment. The maternity and child welfare scheme is to be extended by the opening of three new centres, making 14 in all, and the appointment of nine additional health visitors, making 27 in all, with the object of giving greater attention to pre-school children and adequately serving the new housing areas. For a number of years Newcastle had a maternal mortality-rate about half the national rate, but for the last two years the rate has risen and in 1929 it was slightly above the national rate of 5·8. Confinements are equally divided in Newcastle between private doctors, midwives, and the Princess Mary Maternity Hospital. It is realised that this hospital is quite out of date as regards buildings and equipment and a proposal is on foot to have it transferred to a new site. At Barrasford Sanatorium a handicrafts shop was opened in August with a skilled instructor, mainly with the object of giving work to the patients which would occupy their minds healthily. There is, however, a ready sale for the goods made.

Out of 377 samples of milk examined, 8·7 per cent. were tuberculous, as compared with 3·7 in the previous year. One tuberculous sample came from a dairy in a neighbouring town with a considerable sale of steam sterilised milk in bottles! There are only 258 cows stalled in the city and amongst these the veterinary inspector found five tuberculous animals. There are 102 separate slaughter-houses in the city and no site has yet been obtained for the public abattoir to which the Health Committee has been for long committed. All the eight swimming baths are now equipped with a continuous system of filtration and aeration. Overcrowding is still prevalent, particularly among the very poor, to whom the 5496 municipal houses, built since the war, have brought no relief. Action with regard to insanitary property has been at a standstill. There are 1166 houses inhabited by 8720 persons which are classified as in insanitary areas; and there are also 143 houses inhabited by 1026 individuals which can be more appropriately dealt with separately. The new by-laws for houses let in lodgings are being enforced, but the bad planning and dilapidation of many of them is an obstacle. There is much overcrowding in these houses, with excessive rents.

Leicester.

Dr. C. Killick Millard says his health committee has made a very complete "declaration" under Section 5 of the Local Government Act, 1929, and that in consequence the North Evington (poor-law) Infirmary has, it is hoped, entered upon a new era of increased service to Leicester as the City General Hospital.

The marriage-rate continues to rise and the birth-rate continues to fall. In the last four years the former has gone up from 16·9 to 19·1, whilst the latter has gone down from 17·0 to 15·2. The death-rate, owing to the influenza epidemic, was higher than in any year since 1918. The pneumonia deaths (284) were more than in any year of the last decade. Influenza deaths numbered 214. For the week ending Feb. 23rd the general death-rate was 40·7, and in the following week 45·2. Three weeks later it was 14·0.

An interesting departure in the tuberculosis scheme was the opening in June of a seaside convalescent sanatorium at Holt, in Norfolk. The Ministry agreed that if the capital charges were met by voluntary subscriptions, the cost of maintenance might be defrayed out of the rates. The patients pay their own rail fare but incur no other expense. There are 22 beds and sanction has been asked for an increase to 26. The beds are occupied by women and children and by men for alternate three-monthly periods. The cancer control clinic, existing primarily to facilitate early diagnosis, is not used as anticipated, and the weekly sessions have become fortnightly ones. It is thought that the name frightens some people away. Possibly "cancer diagnosis" would have been less alarming than "cancer control." In 1927 the new cases of syphilis were 70 male and 75 female. In 1928 the new female cases rose to 104 and in 1929 the new male cases rose to 125. No adequate reason for this sudden increase has been discovered. The Leicester Health Committee raise no objection to the medical officers of the welfare centres giving advice on birth control to married persons, who consult them, in any cases where such advice seems to them to be called for.

In spite of all the house building, gross cases of overcrowding constantly come to notice and the great need in Leicester is among the poorest section of the community, who have not been benefited, as was expected, indirectly by a filtering-up process. Dr. Millard urges that the use of raw coal in all municipal offices should be discontinued, as such a step would give a great stimulus to the production of smokeless fuel. He himself has used smokeless fuel for three years with satisfactory results. He also has much to say in favour of sunbathing, and urges that Leicester should be a pioneer in this matter and make provision for sunbathers in its parks and recreation grounds. He adds weight to his advice by the statement that his remarks on the subject were penned in a secluded corner of his garden, whilst taking a customary sun bath in a costume that weighed exactly 1 ounce.

Dr. H. Stanley Banks states that of 313 scarlet fever cases treated in the hospital 172, including all the well-marked and severe cases admitted before the fourth day of the disease, were treated with scarlatinal antitoxin given intravenously. He gives particulars of the few complications that arose. The average stay in hospital for all scarlet fever cases was 21 days. He also finds that severely toxic cases of diphtheria, admitted on the third day of the disease or earlier, can generally be saved by very large doses of antitoxin given intravenously, and he claims that severe forms of post-diphtheritic paralysis have been practically abolished by this method. In all forms of infectious disease when middle-ear suppuration occurs zinc ionisation is carried out after a few days and repeated twice weekly until the ear is dry, and the result is said to be uniformly good.

The public analyst, Mr. F. C. Bullock, B.Sc., found formalin in two milk samples and boric acid in three cream samples. Two years' working of the regulations prohibiting the addition of preservatives to cream shows, he says, that the anticipated difficulties were largely exaggerated.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED NOV. 8TH, 1930.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 92 (last week 87); scarlet fever, 2077; diphtheria, 1557; enteric fever, 55; pneumonia, 725; puerperal fever, 46; puerperal pyrexia, 111; cerebro-spinal fever, 11; acute poliomyelitis, 10; acute polio-encephalitis, 4; encephalitis lethargica, 11; dysentery, 22; ophthalmia neonatorum, 87. No case of cholera, plague, or typnus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Nov. 11th–12th was as follows:—Small-pox, 161 under treatment, 6 under observation (last week 183 and 3 respectively); scarlet fever, 1857; diphtheria, 2223; enteric fever, 18; measles, 85; whooping-cough, 104; puerperal fever, 24 (plus 9 babies); encephalitis lethargica, 122; poliomyelitis, 1; "other diseases," 42. At St. Margaret's Hospital there were 13 babies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 4 (1) from enteric fever, 32 (0) from measles, 7 (1) from scarlet fever, 8 (1) from whooping-cough, 33 (6) from diphtheria, 86 (23) from diarrhœa and enteritis under two years, and 40 (3) from influenza. The figures in parentheses are those for London itself.

The fatal case of enteric fever outside London was reported from Wolverhampton. Measles accounted for 7 deaths at Bristol, 3 each at Walsall, Birmingham, Liverpool, York, Hull, and Gateshead. Birmingham reported 4 fatal cases of diphtheria. Diarrhœa accounted for 6 deaths each at Birmingham and Liverpool, 3 each at Stoke-on-Trent, West Hartlepool, and Gateshead. Influenza was credited with 5 deaths at Liverpool, 4 each at Birmingham and Manchester.

The number of stillbirths notified during the week was 270 (corresponding to a rate of 41 per 1000 births), including 43 in London.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

THE NEW MOTORING REGULATIONS.

THE dates have now been fixed for bringing into operation the various sections of the Road Traffic Act. Most of the provisions of Part I., including those for licensing drivers, and those for careless and dangerous driving, will come into force on Dec. 1st, but the abolition of the speed limit for light cars and the new limits for heavier vehicles will not become operative until Jan. 1st.

On and after Dec. 1st the old form of driver's licence, which was granted without question as to the physical fitness of the applicant, will cease to be issued, but the old licences issued up to and including Nov. 29th will be valid until their normal date of expiry, with certain exceptions. A motor cyclist under the age of 16 will not be allowed to drive a motor-cycle after Nov. 30th unless he satisfies the licensing authority that he was in the habit of driving a motor-cycle for the six months before Jan. 1st, 1930, in which case he must surrender his old licence on Dec. 1st and obtain a new licence under the Act. A person under the age of 21 will not be allowed to drive a heavy vehicle unless he satisfies the licensing authority that he was in the habit of driving a motor vehicle of that class for the six months before Jan. 1st, 1930, and in this case also he must surrender his old licence and apply for a new one.

To obtain a driving licence under the new Act, a new form of application, known as "D.L.I.," will have to be filled up. Sections A and B of this form, providing for the formal application and for particulars of name and address, are similar to the forms under the old Act. Section C, however, is entirely new and is a declaration as to the physical fitness of the applicant. Three specific questions have to be answered. The first question is: "Do you suffer from epilepsy, or sudden attacks of disabling giddiness or fainting?" An applicant who answers "Yes" to this is absolutely debarred from obtaining a licence. Applicants who are in any doubt as to their answer are urged to seek medical advice, as the penalties for making a false declaration are severe. The second question is: "Are you able to read at a distance of 25 yards in good daylight (with glasses, if worn), a motor-car number plate containing six letters and figures?" A negative answer to this question will also debar an applicant from obtaining a licence. Applicants in doubt in this matter are also advised to seek medical advice, as the use of glasses may enable them to obtain the correct standard.

The disabilities mentioned constitute an absolute bar to applicants for driving licences, but a certain amount of relaxation is given in regard to the third question, which is: "Have you lost either hand or foot or are you suffering from any defect in movement, control, or muscular power of either arm or leg? If so, give particulars." If an affirmative answer is given and the applicant has not during the past six months been in the habit of driving a motor vehicle, he may sign Section D of the application form, which is a claim to undergo a driving test. If he passes the test he will be granted a licence, although certain conditions may be imposed as to the construction of the car to be driven. An applicant who gives an affirmative answer to this question and who has been in the habit of driving for the previous six months without danger will be entitled to a licence without test. Provision is also made for a disabled person

who wants to learn to drive in order to pass the driving test referred to, and he may obtain a provisional licence for three months, subject to the condition that he shall only drive when under the supervision of a competent instructor.

Part II. of the Act, which relates to compulsory insurance against third-party risks, will become operative on Jan. 1st, and the draft regulations will be ready in their final form next month. The insurance companies are preparing the necessary certificates. In cases where motorists are already adequately covered there will be no need to take further action; they will receive their certificates from their insurance companies in due course without having to apply for them.

WORKMEN'S COMPENSATION BILL.

In the House of Commons on Friday, Nov. 14th, Mr. LAWTHER moved the second reading of the Workmen's Compensation Bill, which substitutes for Subsection (4) of Section 9 of the Workmen's Compensation Act, 1925, the following Subsection:—

> If a workman who has so far recovered from an injury as to be fit for employment of a certain kind has failed to obtain such employment, he shall be deemed not to be able to earn wages and the judge shall order that his incapacity shall, for the purposes of this Act, be treated as total incapacity resulting from the injury for such period, and subject to such conditions, as may be provided by the order, without prejudice, however, to the right of review conferred by this Act:
>
> Provided that every such order shall be made subject to the condition that it shall cease to be in force if the workman receives unemployment benefit:
>
> Provided also that no such order shall be made if it is proved to the satisfaction of the county court that the workman has not taken all reasonable steps to obtain employment as aforesaid.

He said that this Bill dealt with the question of light work for partially incapacitated men. A miner, for example, might be suffering from miners' nystagmus, a scheduled disease admitted to be one of the most terrible from which a man could suffer. Yet within 6 or 12 months he could be taken before the medical referee, who would state that it was possible for the man to do light work, with the result that he was no longer entitled to full compensation. Hundreds of such decisions had been given, and it was because of the gross injustice that it was sought to bring about the change provided by the Bill. The Bill was not for miners alone, and similar cases could be found in all industries. If an injured man could not do his own job he ought to have full compensation.

Mr. ROWSON seconded the motion for the second reading of the Bill.

MOTION FOR REJECTION.

Sir W. GREAVES-LORD moved the rejection of the Bill. He said that the principle laid down in the Workmen's Compensation Act was that if a man was injured in the course of his employment he should get compensation if, as a result of his accident, he was unable afterwards to earn the same wages. Everything that was really a consequence of the accident was taken into account in awarding compensation. But the Bill left out of account altogether the question whether the failure to obtain employment was the result of the injury. Under the Bill the position would be this—if a man proved to a county court judge that he had an injury and that since his injury he had not been able to obtain employment, although his recovery was such that he was fitted for work, that man was to be considered by the judge as being incapacitated as a result of the accident unless the employer was able to prove that he had not reasonably tried to obtain work. The effect of the Bill would be to substitute for the Workmen's Compensation system a system of unemployment insurance and to put the whole burden of the insurance on the particular employer for whom the workman happened to be working at the time of his injury.

Major GLYN, in seconding the motion for the rejection of the Bill, said that the measure would lead to an enormous amount of litigation. The object they had at heart, to which the House would agree without dissent, was to make it clear that a workman who suffered injury as the result of his employment which prevented him from being the same useful unit in the industrial organisation of the country should be compensated for that injury. It was not right to say that every employer should be responsible for saying whether a workman had genuinely tried to seek work.

After further debate,

Mr. SHORT, Under Secretary for the Home Office, said that there was complete agreement that a grievance existed and that it must be remedied. The Government were prepared to give general support to the principle of the Bill. He could not give any figures as to the additional cost which the measure would entail. The Government would retain a free hand regarding amendments that might be placed on the paper in the Committee stage.

The Bill was read a second time without a division.

HOUSE OF COMMONS.

WEDNESDAY, NOV. 12TH.

Medical Information on Birth Control.

Mr. FREEMAN asked the Minister of Health whether his attention had been called to the recent action of the Warwickshire County Council in authorising their medical officers to give medical information on birth control to married women; and, if so, what action, if any, he proposed to take in the matter.—Mr. GREENWOOD replied: Yes, Sir, I have been in communication with the Warwickshire County Council on this matter and have indicated to them the limited extent to which, in the view of the Government, maternity and child welfare centres may properly be used for this purpose. I am sending my hon. friend a memorandum which states the views of the Government on this question.

Sanatorium Accommodation in Kent.

Captain BALFOUR asked the Minister of Health the number of tuberculous cases awaiting admission for sanatorium treatment in Kent on Nov. 1st as compared with May 1st; and whether such cases awaiting admission included patients notified tuberculous on account of acute pleurisy.—Miss LAWRENCE (Parliamentary Secretary to the Ministry of Health) replied: The number of persons who were awaiting admission to residential institutions under the County Council's scheme was 99 on Nov. 1st, as compared with 81 on May 1st, the number of persons who were receiving treatment on these dates respectively being 595 and 559. These figures relate to persons medically recommended as suitable for residential treatment, and include any such persons who may have been notified as tuberculous on account of acute pleurisy.

Captain BALFOUR: In view of the fact that I can bring to the notice of the Minister specific cases where doctors have certified people as urgent cases and they have had to wait many weeks, will the hon. lady urge the County Council medical authorities to take steps to provide greater sanatorium accommodation?

Miss LAWRENCE: If the hon. Member will give me any cases I shall be delighted to inquire into them.

Medical Referees in Scotland.

Mr. STEPHEN asked the Secretary for Scotland if there were regulations for the guidance of medical referees under the National Health Insurance Act; and, if so, whether the rules laid down any period of time from certification by the panel doctor before the referee might question the seriousness of the illness of the person so certificated by his or her own medical adviser.—Mr. ADAMSON: The answer to the first part of the question is in the negative. Cases may be referred to the Regional Medical Officer for his opinion either as to capacity for work or state of health at any stage of the illness.

Mr. STEPHEN: Can the right hon. gentleman say who refers them to the regional medical officer?

Has not the panel doctor any authority in regard to the state of health ?

Mr. ADAMSON : The selection of cases for reference is made by the approved society or general practitioner concerned, and can be made either on a question of capacity or incapacity for work or in order to obtain a second opinion about the patient's state of health. Insured persons in receipt of certificates of incapacity for work from their panel practitioners can be referred at any time. It should be borne in mind that the medical referees merely express an opinion on the question of incapacity. The decision as to whether benefit should be continued or stopped rests entirely with the approved society, and though they may be influenced by the opinion expressed by the medical referees the matter is one for which they must accept complete responsibility.

Mr. STEPHEN : Is the right hon. gentleman aware that there is a great deal of discontent owing to the number of references that are made quite obviously without any real reason to the regional medical officer, and will he look into the matter and have it stopped ?

Mr. ADAMSON : If my hon. friend has any particular case brought to his notice I shall be prepared to have inquiries made about it.

THURSDAY, NOV. 13TH.

Milk for School-children.

Mr. ALPASS asked the President of the Board of Education what was the present position with regard to providing children with milk daily while attending school.—Sir CHARLES TREVELYAN replied : An increasing number of Local Education Authorities and teachers are coming to recognise the value of a daily ration of milk to children attending their schools. In the week ending Nov. 1st 35,000 children received milk free and 48,000 for payment, under arrangements made by the Local Education Authorities for the provision of meals. It is now estimated that 500,000 children, or about 9 per cent. of the elementary school population of England and Wales, are receiving a daily supply of milk under schemes organised by the National Milk Publicity Council. The corresponding estimate six months ago was 400,000.

Psittacosis.

Mr. CLARKE asked the Minister of Health the number of deaths attributed to psittacosis during the last three years.—Mr. GREENWOOD replied : The number of deaths registered in England and Wales during the period Jan. 1st to Sept. 30th, 1930, in respect of which psittacosis appeared on the medical certificate as a cause of death was 15. There were no deaths recorded from this cause in 1927 or 1928, but there was one death in 1929 registered as being due to broncho-pneumonia and septicæmia, which, as the result of the inquiry made in accordance with the usual practice of the Registrar-General, was attributed to psittacosis.

Tubercle Infection in Imported Cream.

Brigadier-General CLIFTON BROWN asked the Minister of Health whether, seeing that no precautions were taken to see that cream imported into this country was free from tuberculosis, he would take steps to see that it was subjected to similar examination for tubercle as milk under the Imported Milk Regulations.—Mr. GREENWOOD replied : I will consider the hon. Member's suggestion. I understand, however, that most of the cream imported from the Continent is sterilised, and I am advised that the danger of the presence of tubercle bacilli in such cream is practically negligible.

Town-planning Schemes.

Mr. D. G. SOMERVILLE asked the Minister of Health if, in the different town-planning schemes submitted to him, he was giving full consideration to the objections, properly formulated, of residents who considered that the proposals affected the amenities of the district in which they lived ; and whether an inquiry was held in all such cases.—Mr. GREENWOOD replied : The answer to both parts of the question is in the affirmative. The permission of development while a town-planning scheme is in course of preparation, however, rests with the local authority concerned, and there is no appeal to me against the granting of such permission. I have recommended local authorities to ascertain and consider the representations of persons likely to be seriously affected by any proposed development before granting permission for it, and I believe that local authorities generally observe the spirit of my recommendation.

B.M.A. and National Medical Service.

Mr. FREEMAN asked the Minister of Health whether he had received a copy of the proposal of the British Medical Association for a general medical service for the nation ; and what action, if any, he proposed to take in the matter.—Mr. GREENWOOD replied : I have received a copy of these proposals, and the principles on which they are based would, of course, receive careful consideration in relation to any further public provision of medical services which might be contemplated in future.

MONDAY, NOV. 17TH.

Medical Reports and Pension Claims.

Mr. STEPHEN asked the Minister of Pensions if he would arrange for a copy of the medical report upon which a claimant's claim to pension was refused to be given to the man upon his request, so that in doubtful cases he might be in a position to submit rebutting evidence from other high medical authority regarding the features of his claim.—Mr. ROBERTS replied : Claims are ordinarily determined in accordance, not with any single medical report but on the evidence of all kinds obtained, after consultation with the Ministry's medical advisers. It is not usually possible in the nature of the case to intimate to an applicant more than that the information furnished has not been sufficient to establish connexion between his present condition and his war service. This intimation is in fact given and the man is at the same time informed that he can submit any further evidence he may at any time have.

Preservation of School Medical Records.

Dr. HASTINGS asked the President of the Board of Education whether the medical records obtained as the result of the examination of school-children when they left school were preserved or destroyed.—Sir C. TREVELYAN replied : It is left to each local education authority to decide how long they shall keep the records of medical inspections of school-children, but I understand that they are generally kept for about five years after the children have left school.

Animals and Poison-gas Experiments.

Mr. FREEMAN asked the Secretary for War the method pursued for proving that poison gas experiments on living animals were applicable to human beings.—Mr. SANDERS replied : A comparison of the gross and microscopic appearance of the lungs of men killed by irritant gases in France with those of animals exposed to the same substance showed that the injuries were of similar nature and character, and further study of such animals gave evidence of the mode of action of the poison and their effects on vital organs. It was thus possible, by correlating these experiments with clinical observations on gas patients, to formulate curative treatments. There is no reason to believe that the connexion between the effect of gas on animals and its effect on human beings, which experience in the war established, does not continue to hold good.

Dissection of a Cat in a School.

Mr. BROMLEY asked the Home Secretary if he would make further inquiries into the case of vivisection of a cat in Haverthwaite school, with the view

of ascertaining the circumstances; and if he was aware that the cat was taken to this school alive in a bag by two of the boys and there chloroformed and dissected, and that some children were sick during this science lesson.—Mr. SHORT replied: A report has been received from the inspector who investigated the case. It is not stated whether the animal was killed on the school premises or not, but this point is of no importance with regard to the question of vivisection, which is the only aspect which my right hon. friend has any authority to deal with. The animal was painlessly killed one day and its body was dissected the next. This is not vivisection; it is entirely outside the Act, and my right hon. friend has no jurisdiction in the matter.

Drugs Manufactured from Opium and Coca Leaf.

Mr. MANDER asked the Home Secretary whether he had any information to show the amount of drugs manufactured from opium and coca leaf by the Soviet Union, Turkey, and India, respectively, in each of the past five years.—Mr. CLYNES replied: The following figures respecting the *Soviet Union* were supplied to the recent preliminary conference of Governments of manufacturing countries by the Soviet Delegation:—

	1927–28 Kilo.	1928–29 Kilo.	1929–30 Kilo.
Heroin	76	31	117
Dionin	426	334	436
Codeine	1946	1681	2884
Morphine hydrochloric	425	470	632
Pantopon	24	145	239
Cocaine	447	735	1120

Note.—These figures, having been telegraphically communicated to the Delegation, may be subject to revision in case of error in transmission. The Soviet Union economic year was originally from Oct. 1st to Sept. 30th. In accordance with the last decisions of the Union Government the economic year will begin as from 1931, on Jan. 1st, and end on Dec. 31st.

With regard to *Turkey*, figures of production of the drugs are not available, but the following figures of exports were supplied to the recent conference by the Turkish Delegation. According to the most recent statistics, the annual export of drugs amounts to 5216 kg. of morphine and 8652 kg. of diacetylmorphine. For the period Jan. 1st, 1930, to June 30th the amounts exported were as follows:—

MORPHINE.

Declared destination.	Amount exported. Kilo.	Declared destination.	Amount exported. Kilo.
Greece	1.680	Italy	399.867
Italy	642	France	277
France	180	Germany	95.90
Greece	2.777.700	China	60
Dantzig	766.500		

With regard to *India* the figures of production are shown in the following Table:—

Manufactured from—	Caffermine.*	Morph.*	Morph. crude.*	Morph. acetate.	Morph. tartrate.	Codeine.	Narcotine.
	oz.	lb. oz.	lb.	lb. oz.	lb. oz.	lb. oz.	lb. oz.
Nov. 1, 1924, to Oct. 31, 1925.	—	140 5	2000	14 11	—	2 2	19 15
Jan. 1, 1926, to Dec. 31, 1926.	—	234 3	4099	4 4	23 5	—	—
Jan. 1, 1927, to Dec. 31, 1927.	—	57	281	—	8 11	2 10	—
Jan. 1, 1928, to Dec. 31, 1928.	13	159 7	738	—	—	5 6	5 0
Jan. 1, 1929, to Dec. 31, 1929.	—	119 6	—	—	—	13 6	10 0

* Hydrochloride.

TUESDAY, NOV. 8TH.

Anæsthetics for Women in Childbirth.

Miss LEE asked the Secretary for Scotland whether the regulations allowed anæsthetics to be given to women in childbirth in prison maternity wards; whether any special diet was allowed to pregnant women; and, if so, what was the nature of such diet.—Mr. JOHNSTON replied: There is nothing in the Prisons (Scotland) Rules to preclude anæsthetics from being given to women in childbirth in Scottish Prisons if the prison medical officer considers it advisable and the prisoner consents. No special dietary scale has been authorised for pregnant prisoners; but the prison medical officer has power to alter diet if satisfied that it is necessary; and it is his duty to see that every prisoner has sufficient food.

Health Insurance in Scotland.

Mr. BUCHANAN asked the Secretary for Scotland if he was aware that certain approved societies, including the Prudential, had issued notices to their members stating that, as from Jan. 1st, 1931, they would not be eligible for benefit from national health insurance owing to their prolonged period of unemployment; and if he proposed taking any steps to deal with this matter. Mr. JOHNSTON replied: The answer to the first part of the question is in the affirmative. The approved societies to which the hon. member refers have acted quite properly in notifying their members of their position under the existing law. As regards the second part, my right hon. friend is in communication with the Minister of Health, and I am not at present in a position to add to the reply given by the Minister of Health on Oct. 30th last.

MEDICAL NEWS

Royal College of Surgeons of England.

An ordinary meeting of the Council was held on Nov. 13th, with Lord Moynihan, the President, in the chair. Dr. Frederick Grant Banting, *M.C.*, M.R.C.S., Professor of Medical Research in the University of Toronto, was elected an Honorary Fellow of the College. Dr. Banting is the first Member to receive this distinction.

The Membership of the College was conferred on the candidates whose names we gave on Nov. 8th as recipients of the L.R.C.P. (excepting A. L. Devi, H. R. Hovsha, A. H. Lendon, D. K. Mulvany). Diplomas in public health were conferred on the candidates whose names have been given, and licences in dental surgery on the following:—

E. C. Austen, Elsa M. Bennett, C. G. W. Brown, S. C. S. Brown, Frances M. Carter, H. D. Cockram, R. G. L. Coe, Helen Cruise, G. M. Davies, D. T. Davis, Braham Deggots, E. S. Edwards, W. M. Ellis, L. E. S. Ffytche, J. H. R. Gaffney, J. H. Glen, F. J. Goldsworthy, H. W. Handley, C. V. Harries, C. G. W. Harrison, C. W. Harrison, K. T. Henderson, J. J. Hinton, H. G. Hobdell, C. H. Hole, F. J. Hood, J. E. Ilott, W. H. Jennings, D. R. Jones, Mary King, A. G. Kirby, F. F. Leek, Malcolm McDowall, A. C. Maguire, F. F. May, E. A. Mayston, R. C. Moody, R. V. Mummery, J. K. Noot, T. D. Popplewell, T. D. Raby, C. P. B. Reed, Helen Shilton, Denis Smith, F. H. Stokes, N. G. Straschun, R. A. Sykes, D. V. Taylor, E. J. Taylor, E. Underhill, R. B. Walters, K. W. Whitworth, and H. M. G. Williams.

The congratulations of the Council were given to Sir Arthur Keith, the Conservator of the Museum, on being elected Rector of the University of Aberdeen. Mr. F. J. Steward was re-elected a member of the committee of management of the Conjoint Examining Board. Examiners and Assessors for the Primary Fellowship Examination to be held at Melbourne, Australia, in August, 1931, were appointed. The President reported that the terms of office of Mr. C. H. Fagge and Mr. Russell Howard on the Court of Examiners would expire on Dec. 10th next, and that the vacancies thus occasioned would be filled up on Dec. 11th, together with the vacancy occasioned by the death of Mr. T. P. Legg.

THE BUCKSTON-BROWNE ANNUAL DINNER.

Fellows and Members dined together in the library of the College on Nov. 13th, for the third time under the terms of the Buckston-Browne Trust, which stipulates that on this occasion at least half the invited guests shall be Members of the College. Lord Moynihan, who presided, recalled the circumstances of Mr. Buckston-Browne's generosity, and in spite of his protest his health was drunk with musical honours. In replying, Mr. Browne took the

opportunity of congratulating Sir Arthur Keith on his election as Rector of the University of Aberdeen. He explained the significance of a souvenir, presented by him to every guest present, in the form of a letter-opener, attached to which was a replica of a bronze catheter found in the house of a surgeon at Pompeii, and evidently more than 2000 years old. Each guest also received a descriptive list of Hunterian and other pictures in the museum collection, many of which have been restored with great skill by the staff at Down House before being returned to the museum. Among the invited guests Lord Moynihan welcomed Lord Chelmsford as chairman of the Post-graduate Medical Committee, and Mr. F. C. Goodenough, chairman of Barclay's Bank, to whom was due the opening of London House as a hostel for post-graduate students. The following is a complete list of those present :—

Council.—Lord Moynihan (President), Mr. C. H. Fagge and Mr. R. P. Rowlands (Vice-Presidents), Sir Holburt Waring, Sir John Lynn-Thomas, Mr. Ernest W. Hey Groves, Mr. F. J. Steward, Mr. J. Herbert Fisher, Mr. W. Sampson Handley, Mr. G. E. Gask, Mr. W. McAdam Eccles, Mr. Wilfred Trotter, Sir Charles Gordon-Watson, Mr. A. H. Burgess, Mr. Victor Bonney, Mr. G. Grey Turner, Mr. Hugh Lett, Mr. Leonard Gamgee, Mr. R. G. Hogarth, Mr. R. E. Kelly, and Mr. Graham Simpson.

Fellows.—Mr. John Adams, Sir John Atkins, Mr. W. Girling Ball, Mr. L. R. Braithwaite (Leeds), Mr. G. Buckston-Browne, Mr. P. W. L. Camps (Teddington), Mr. John Clay (Newcastle), Mr. H. G. G. Cook (Cardiff), Mr. R. S. Corbett, Sir T. Carey Evans, Mr. H. A. T. Fairbank, Mr. C. W. Flemming, Mr. E. C. Hughes, Sir Arthur Keith, Mr. W. H. Kelson, Mr. A. Harold Levy, Mr. Albert Lucas (Birmingham), Mr. Reginald T. Payne, Prof. A. W. Sheen (Cardiff), Dr. P. Montague Smith, Mr. A. M. Webber (Nottingham), Mr. Garnett Wright (Manchester), and Mr. H. Blacow Yates (Sheffield).

Members.—Dr. John Attlee, Sir George Badgerow, Mr. Henry Bailey (Leeds), Dr. S. M. Banham, Dr. A. E. Barclay (Manchester), Dr. D. L. Beath (Bath), Mr. W. R. Bett, Dr. G. E. Birkett (Manchester), Mr. H. E. G. Boyle, Dr. Cecil Bull, Mr. R. F. Bury (Leamington), Dr. Dennis Embleton, Mr. M. I. Finucane, Dr. G. E. Genge-Andrews, Dr. G. T. Giddings (Beckenham), Mr. Elliott T. Glenny (Clifton), Dr. T. A. Goodfellow (Manchester), Dr. A. Hunnard (Mansfield), Mr. C. I. Kirton, Dr. Arthur Lankester (Purley), Lieut.-Colonel L. E. Lanyon-Owen, Mr. H. O. Long, Mr. H. C. Malleson, Mr. F. H. Mayo (Leeds), Dr. E. C. Morland (*The Lancet*), Dr. T. Crofts Neville, Dr. Ralph Norman (Thorpe Bay), Dr. P. Seymour Price, Dr. A. W. Read, Dr. Leslie Reynolds (High Wycombe), Dr. H. B. Roderick (Cambridge), Dr. W. T. Rowe (Nottingham), Lieut.-Colonel C. T. Samman, Dr. Howard Stratford, Dr. Harold Waller, Dr. A. M. Ware, Mr. J. L. Whatley (Knowle), and Mr. H. Wood-Hill (Beccles).

Others present. — Viscount Chelmsford, Mr. F. C. Goodenough, Rt. Hon. Sir Francis Acland, Dr. Allen Mawer (Principal of University College), Prof. Henry Armstrong, Prof. C. J. Patten, Dr. H. R. Oswald, Dr. G. C. Peachey (Editor of the *Medical Press*), Mr. R. Scott Stevenson (Editor of the *Practitioner*), Mr. S. Forrest Cowell (Secretary, R.C.S.), Mr. R. H. Burne (Physiological Curator), and Mr. Kennedy Cassels (Assistant Secretary).

Society of Medical Officers of Health.

Prof. Harold Kerr took the chair at the annual dinner of this Society on Nov. 13th. After the toast of H.M. the King had been honoured, Mr. Arthur Greenwood, Minister of Health, proposed "The Society." He remarked that since the appointment of the first medical officer of health in Liverpool 80 years ago, medical officers had exercised a great and growing influence over the attitude of the people towards general health questions. They were slowly but surely teaching a healthy way of life, which was better than any prescription for a particular disease. The place of a nation in the eyes of the world depended upon the quality of the common stock. This country had the best common stock that the world produced, but was not making the best of it. The Society was a most powerful medium in the country for abolishing preventable disease, and its responsibilities grew progressively heavier as the importance of the problem was realised. The President, in reply, complimented the Minister of Health on his invaluable work in coördinating the many health organisations of the country and on his effective administration of the Local Government Act. He believed profoundly, he said, in the value of such a representative body as theirs. Not only did it voice the corporate opinion, but it brought members from different districts into contact and allowed them to compare their experiences and thrash out new problems before putting them into execution. Moreover, it was invaluable as a social medium ; he owed to it many of his best friends. It was the dream of the Society that the general practitioner should become a preventionist. Already, by removing the flow of sick babies from which in the old days the family doctor had derived much of his income, they had turned him from a cynic into a stoic. Alderman David Adams (Lord Mayor of Newcastle-on-Tyne), proposing the health of "The President," said that Prof. Kerr had so organised the health services of the city as to preserve the status of the general practitioner. Newcastle boasted of being easily the foremost city of the country in its zeal for public health improvement. Sir Arthur Newsholme proposed the "Guests of Honour." He recalled many famous names from the list of former presidents. In welcoming the great improvement in the relations between the Society and the British Medical Association, he accepted as a happy augury for the future the election of Dr. W. G. Willoughby to the Presidency of the Association. Sir Eustace Hill, in reply, illustrated by his reminiscences the rise of medical officers of health in popular estimation. Dr. Willoughby also replied. The general practitioners of his district, he said, had with him come to the conclusion that there was no such thing as "encroachment," but that there was a great deal of mutual assistance. All branches must trust one another and work together while preventable disease still remained to be conquered.

Presentation to Mr. G. S. Elliston.—Dr. G. F. Buchan then proposed the health of Mr. G. S. Elliston, who was retiring from the position of executive secretary of the Society which he had held for 12 years. When Mr. Elliston had come, he said, the membership had been 700 ; to-day it was 2000, and they owed to his powerful inspiration a measure of prosperity which they had never before attained. He presented Mr. Elliston, on behalf of the Society, with an engraved silver tray and a motor-car. Mr. Elliston, in reply, said that the debt was entirely on his side and that he had met with nothing but kindness and generosity from every member during his office. In 12 years he had only once proposed a question which Dr. Buchan had been unable to answer : that had been when a member had inquired about the mechanism for claiming a rebate on super-tax !

B.M.A.: Ninth Annual Council Dinner.

The Chairman of Council, Dr. H. Brackenbury, took the chair at the ninth annual dinner of the Council of the British Medical Association, held in the Great Hall on Nov. 11th. After the loyal toast had been honoured, the chairman proposed the health of the "Retiring Officers." Sir Ewen Maclean, he said, had been overseas at the time of his retirement last year, and the thanks which the Association owed him had accordingly been postponed until that evening. Prof. A. H. Burgess, although retiring, continued to represent the Association as Acting President during the year of office of Prof. Harvey Smith of Winnipeg. Prof. Burgess and Sir Ewen were alike in the physical world and in the world of physic ; their work on surgery and obstetrics was widely recognised, their services to the Association were acknowledged by all, and they shared a comforting gift of genial friendliness. They had both travelled overseas for the Association, Prof. Burgess to Canada, and Sir Ewen on his tour of the Dominions. Sir Ewen Maclean, in reply, presumed that the term "retiring" did not refer to his or Prof. Burgess's disposition. He claimed, however, to be the more retiring of the two, as his retirement would be perfect at the end of the evening while his colleague's would remain imperfect until the coming summer. The centenary celebrations in 1932 would show still more clearly what had so impressed him on his world tour : the stout bond between the profession in this country and overseas. Prof. Burgess, also replying, congratulated the officials of the Association and of the Canadian Pacific Railway on the excellent organisation which had made the Canadian visit so successful. The reception of the delegates by the Prime Ministers of each province and of the Dominion had shown that Canada regarded the Association as a great Imperial body. Mr. T. P. Dunhill, proposing the "Common Health," said that their organisation was necessary, not for their own protection but for their success in bearing the responsibilities of their profession. In so far as they kept in the forefront of their thoughts their opportunities for service, so far would they carry with them the approval of mankind and their consciences. Sir Arthur Robinson, replying, regretted the absence of Mr. J. R. Clynes at an important Cabinet meeting. Homer, he said, had constantly referred to a a physician as Μαχάων Ἀσκληπίου υἱὸς ἀμύμονος ἰητῆρος, a description which physicians were still trying to justify. Herodotus had complained that the physicians of Egypt had concentrated on one disorder each, and, to judge from the disputes which occurred between the specialist and the general practitioner, it was doubtful whether we had advanced much in this respect. He was sure, however, that the general practitioner was the foundation of the public health services, and so long as the general practitioner regarded himself not merely as a curer but as a preventer of illness he would continue to flourish. He was confident that the new post-graduate school, if properly supported, would be of the very greatest value. Dr. C. O. Hawthorne, in

proposing the health of the guests, welcomed individually the representatives of the allied and sister organisations. Sir Norman Bennett, in response, pleaded for more coöperation and less dogmatic assertion between doctor and dentist, and Sir Basil Blackett hoped that the obligation of raising funds for the centenary celebrations would not bring him under treatment for nervous disorder. Sir William Wheeler proposed the health of the chairman, and Dr. Brackenbury briefly replied.

Society of Apothecaries of London.

Presiding over a Yeomanry dinner on Nov. 18th, Lieut.-Col. C. T. Samman, the Master, proposed the health of His Majesty's Ministers and presented the honorary freedom of the Society to Mr. Arthur Greenwood, Minister of Health. Mr. Greenwood modestly maintained that His Majesty's Ministers were the best Ministers His Majesty had at the present time. As a plain man he could not pretend to understand all the large public questions arising in his office; he would be certifiable if he did. But he would not willingly change his job for any other in the world, and he would always be proud of having presided over what he regarded as the most important Department of State. The place this country would occupy in the world depended on the general level of capacity of the people, and in so far as the public health services could cut at the root of preventable disease they were doing immensely valuable work. Regardless of political views, he was willing to coöperate with anyone who could help in this work, and this would be the policy of Ministers of Health in the future as well as in the past.

After Mr. Greenwood had received the freedom, Prof. H. E. Armstrong, F.R.S., made a lively speech introducing Prof. Ernest Fourneau, of the Pasteur Institute, Paris, the recipient of the Society's gold medal for service to therapeutics. Prof. Armstrong favourably compared Fourneau's deliberate researches with those of Ehrlich and described his discovery of stovaine and other investigations as "far more thrilling and far more wonderful than any detective story." In this award the Society carried the approval of all Prof. Fourneau's scientific brethren; no better choice would have been possible. The presence of Sir Donald MacAlister and other leaders of the medical profession stimulated Prof. Armstrong to ask whether something could not be done to raise the standard of chemical training for medicine. As one who began teaching chemistry in London in 1870 he earnestly pleaded that it should be raised to a higher plane. In thanking the Society, Prof. Fourneau said he sometimes wondered whether it was not relatively easy to be noticed as a prophet in one's own country. He was, therefore, all the more grateful for this recognition from abroad. The First Secretary of the French Embassy, deputising for the French Ambassador, also thanked the Society for its honour to Fourneau and French science.

Colonel E. C. Freeman, as senior warden, hospitably proposed the toast of the guests, and responses came from Mr. Justice McCardie, the Dean of St. Paul's, and Sir William Jackson-Pope, F.R.S. Sir Henry McCardie referred to the foundation of the Society when Milton was in the nursery and Cromwell was still at school. Dean Inge spoke of the power of faith in medicine, and quoted a letter he had lately received from a lady saying: "I am praying for your death; in two other instances I have been highly successful." And following these representatives of Law and the Church, Sir William Jackson-Pope replied on behalf of what he called "the subjects that haven't mattered much since the war ended—the Army, the Navy, and science."

Glasgow University Club, London.

The annual autumn dinner of this club is to be at the Trocadero Restaurant, Piccadilly, W., on Friday, Dec. 12th, at 7.30 P.M. The Archbishop of Canterbury is to be in the chair. Any Glasgow University men who, though not members of the club, desire to attend, are requested to communicate with the hon. secretaries at 62, Harley House, N.W. 1.

Edinburgh University Club of London.

The Edinburgh University Club held its 220th dinner at the Café Royal, London, on Nov. 12th. For the first time since his election to the office of Chancellor of the University, in place of the late Lord Balfour, Sir James Barrie took the chair and presided over a large and friendly gathering. In the course of his speech he described the new undergraduates before whom he had recently given his inaugural address. To-day, he said, their dress suits were so perfectly fitting that a postage stamp in one of the pockets would cause a bulge, and he attributed this change from former times to the influence of women in the University. The health of the guests was proposed by Dr. L. F. Knuthsen with many neat allusions, and Lord Moynihan replied. Lord Aberconway represented the legal profession, giving the health of the chairman.

British Serbian Units.

The annual dinner of the British Serbian Units Branch of the British Legion and of all friends of Serbia will be held at the Grafton Hotel, Tottenham Court-road, London, W., on Saturday, Nov. 29th, at 7.15 P.M. Mr. J. R. Chappell will take the chair. Tickets may be had from Miss Marx, 24, Melcombe-court, Dorset-square, N.W. 1.

The Eastman Dental Clinic.

This clinic, adjoining the Royal Free Hospital, began work on Monday last. It has been built at the cost of Mr. George Eastman, chairman of the Eastman Kodak Company of America, and has been endowed jointly by Lord Riddell and Sir Albert Levy.

Birmingham General Hospital.

Sir Gilbert Barling, senior consulting surgeon and vice-president of Birmingham General Hospital, recently opened a new casualty department, with three wards and other extensions in that institution. Sir Gilbert stated that the hospital dealt with an average of 40,000 casualties a year. The cost has been about £45,000.

Ashford Nurses' Hostel.

Princess Helena Victoria recently opened the new nurses' hostel at Ashford Hospital, Kent, which was opened two years ago. The hospital, which in consequence of the liberation of the nurses' former quarters will now accommodate 86 patients, is a recognised training centre for nurses.

Royal United Hospital, Bath.

Mr. Aubrey Bateman, the Mayor of Bath, who has just completed his term of office, initiated a campaign to raise £90,000 for the rebuilding of the Royal United Hospital, to meet a promised donation of £10,000 by Mr. Stanley Wills, conditionally upon that sum being raised by the end of Mr. Bateman's mayoralty. The amount actually obtained by noon on Nov. 10th was £73,500, whereupon Mr. Wills at once redeemed his promise. This was his second donation of £10,000.

Fire at Sheffield Royal Hospital.

On Tuesday last week an outbreak in the basement of Sheffield Royal Hospital necessitated the removal into the open air as a precautionary measure of the patients in the casualty ward. The fire brigade arrived promptly and subdued the flames in a few minutes, and not much damage was done, but Mr. W. A. Booth, the secretary, was severely burned on the face and hands. Inspector Cornish, the second officer of the brigade, was similarly injured, and an electrician suffered from less serious burns.

A Course for Lady Almoners.

It is proposed to give a course suitable for lady almoners at Armstrong College, Newcastle-on-Tyne, and a small group of students has already been formed. It is hoped that eventually the whole of the training will be given there, thus avoiding the necessity of students coming to London for the practical part of their experience in a hospital and with a recognised social service organisation.

Central Council for Health Education.

At the third annual Health Education Conference, organised by the Council and held on Nov. 13th in the School of Tropical Medicine, Lord Riddell, who presided at the first session, gave an address entitled "Publicity in Public Health." He referred to the vast improvement in health organisation in the space of a generation, but questioned whether the social services were based on a correct philosophy. Was it sound that we spent so much money each year in caring for mentally defective persons while we restricted our expenditure on the normal child? He put forward a strong plea for sterilisation, which gave rise to lively discussion. Several speakers complained that popular health articles were refused by the lay press. Lord Riddell suggested that a better method of securing editorial notice was to make some startling expression of opinion on a subject which would be taken up by reporters with avidity. Mr. John Hall described the method he uses in popular health talks. By a combination of simple sketches and verbal mnemonics he builds up on the blackboard an astonishing series of biological pictures. Prof. H. R. Kenwood, who presided over the afternoon session, gave a résumé of the Council's coördinating function during the past year. Mr. G. H. Barker, a member of the National Union of Teachers, told of insanitary conditions in schools. Dr. A. Adam, speaking for the German Central Agency for Popular Hygiene, described the teaching of health in the schools of the Reich. The Conference was well attended by representatives of local authorities and voluntary societies. Some of the latest health films were demonstrated.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
MONDAY, Nov. 24th.—8 P.M., ODONTOLOGY. Casual communication: Mr. J. Lewin Payne: A Case of Re-plantation and the Result after Nine Years. Paper: Dr. A. F. Hurst: The Teeth and the Stomach.
TUESDAY.—5 P.M., MEDICINE. Clinical Meeting at Guy's Hospital, S.E. Cases: Dr. A. F. Hurst: 1. Parathyroid Tumour with Osteitis Fibrosa. 2. Aplastic Anæmia of Five Years' Duration. 3. Tumour of Liver with Extreme Leucocytosis. Dr. J. J. Conybeare: 4. Infantile Hepatomegaly with Diaphragmatic Hernia. Dr. J. M. H. Campbell: 5. Rheumatic Heart Disease with Temporary Complete Heart Block. Dr. L. J. Witts: 6. Hepatic Cirrhosis with Diabetes Mellitus. Dr. A. C. Hampson: 7, 8 and 9. Multiple Hereditary Telangiectases. Dr. R. E. Smith: 10. Hour-glass Carcinoma of Stomach. Dr. E. C. Warner: 11. Familial Nystagmus. Dr. E. T. Conybeare: 12. Familial Essential Thrombocytopænia. Dr. C. F. Cosin: 13. Microcytic Anæmia after Gastro-enterostomy Cured by Iron. 14. Megalocytic Anæmia after Gastro-enterostomy Cured by Liver. Dr. R. S. Bruce-Pearson: 15. Chronic Trophœdema. Dr. H. J. Croot: 16 and 17. Erythræmia with Peripheral Vascular Changes. Other cases will be shown.
WEDNESDAY.—5 P.M., COMPARATIVE MEDICINE. Papers: Dr. G. H. Edington and Dr. D. F. Cappell: Columnar-celled Adenocarcinoma Arising in Undescended Testicle of Horse, with secondary Deposits in Thorax. Dr. Nathan Raw: Transmission of Tuberculosis from Animals to Man.
THURSDAY.—8.30 P.M., UROLOGY. Clinico-Pathological Evening.
FRIDAY.—5 P.M., CHILDREN. (Cases at 4.30 P.M.) Cases will be shown. 8 P.M., EPIDEMIOLOGY. Paper: Dr. J. M. Hamill: Food as a Preventive of Disease.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
MONDAY, Nov. 24th.—8 P.M., Clinical Evening.

ROYAL INSTITUTION, 21, Albemarle-street, W.
THURSDAY, Nov. 27th.—5.15 P.M., Mr. L. C. Martin, D.Sc.: Colour Vision (2).

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos-street, Cavendish-square, W.
FRIDAY, Nov. 28th.—8.30 P.M. (at the Wellcome Museum of Medical Science, 33, Gordon-street, W.C.), Dr. S. H. Dawkes: The Application of the Synthetic Method of Teaching to Syphilis and Yaws, with demonstration of specimens, &c., to be followed by a discussion.

THE EUGENICS SOCIETY.
TUESDAY, Nov. 25th.—5.30 P.M. (at the rooms of the Linnean Society, Burlington House, W.), Mr. W. T. J. Gunn: The Heredity and Environment of our Empire Builders.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, Nov. 24th to SATURDAY, Nov. 29th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W., Special M.R.C.P. Lectures at 8.30 P.M.—Tues. and Fri., Dr. W. J. Adie: Diseases of the Nervous System. Mon., at 4 P.M., Mr. E. G. Slesinger: Recent Advances in the Treatment of Toxic Goitre. Free lecture.—HAMPSTEAD GENERAL HOSPITAL, Haverstock Hill, N.W. Demonstration on selected Medical Cases by Dr. Adolphe Abrahams on Mon., at 3 P.M. No fee for attendance.—EAST LONDON HOSPITAL FOR CHILDREN, Shadwell, E. Demonstration of Orthopædic cases by Mr. Acton Davis on Wed., at 2 P.M. No fee for attendance.—CITY OF LONDON HOSPITAL FOR DISEASES OF THE HEART AND LUNGS, Victoria Park, E. Special post-graduate course. All day.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Special course in medicine, surgery, and gynæcology.—WEST END HOSPITAL FOR NERVOUS DISEASES, 73, Welbeck-street, W. Special course late evening. Demonstrations on selected cases at 5 P.M.—ST. MARK'S HOSPITAL, City-road, E.C. Special all-day course in proctology.—Further particulars from the Fellowship of Medicine.

NATIONAL HOSPITAL, Queen-square, W.C.
MONDAY, Nov. 24th.—12 noon, Dr. Greenfield: Pathology of Cerebral Tumours. 2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Kinnier Wilson: Drug Addiction.
TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Mr. Armour: Head Injuries.
WEDNESDAY.—2 P.M., Dr. Martin: Out-patient Clinic.
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Gordon Holmes: Diseases of the Pituitary Body.
FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. James Collier: Acute Diseases of the Spinal Cord and Brain Stem.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.
MONDAY, Nov. 24th.—10 A.M. to 1 P.M., Surgical Wards, Genito-Urinary Operations, Skin Department. 2 P.M., Operations, Surgical Wards, Medical, Surgical, Eye and Gynæcological Out-patients.
TUESDAY.—10 A.M. to 1 P.M., Medical Wards, Clinical Demonstration (Surgical), Dental Department. 2 P.M., Operations, Medical, Surgical, and Throat Out-patients.
WEDNESDAY.—10 A.M. to 1 P.M., Medical and Surgical Wards, Children's Medical Out-patients. 2 P.M., Gynæcological and General Operations, Medical, Surgical, and Eye Out-patients.
THURSDAY.—10 A.M. to 1 P.M., Neurological Out-patients, Demonstration of Fractures. 2 P.M., Operations, Medical, Surgical, and Genito-Urinary Out-patients.
FRIDAY.—10 A.M. to 1 P.M., Medical Wards, Skin Department, Dental Department, Clinical Demonstration (Medical). 2 P.M., Operations, Medical, Surgical, and Throat Out-patients.
SATURDAY.—10 A.M. to 1 P.M., Throat Operations, Bacterial Therapy Department, Medical Wards, Children's Medical and Surgical Out-patients.

THE LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, Leicester-square, W.C.
TUESDAY, Nov. 25th.—5 P.M., Dr. H. W. Barber: Immunity and Anaphylaxis.
THURSDAY.—5 P.M., Dr. G. B. Dowling: Staphylococcal Infections.

LONDON SCHOOL OF TROPICAL MEDICINE AND HYGIENE (Public Health Division).
THURSDAY, Nov. 27th.—5 P.M., Dr. J. S. Owens: Atmospheric Pollution.

KING'S COLLEGE, Strand, W.C.
THURSDAY, Nov. 27th.—5 P.M., Mr. W. Robson, D.Sc.: Protein Metabolism. (Third of four lectures.)

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.
THURSDAY, Nov. 27th.—9 P.M., Mr. C. P. G. Wakeley: Thyroid Enlargement and Its Treatment.

UNIVERSITY COLLEGE, Gower-street, W.C.
MONDAY, Nov. 24th.—5 P.M., Mr. L. E. Bayliss, Ph.D.: Respiratory Functions of the Blood. (Third of four lectures.)

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, Nov. 24th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose, and Throat Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Throat, and Ear Clinics. Operations.
FRIDAY.—10.30 A.M.: Ear, Nose, and Throat Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Children's Diseases Clinics. Operations.

CITY OF LONDON MATERNITY HOSPITAL, City-road, E.C.
THURSDAY, Nov. 27th.—5 P.M., Mr. R. C. Brown: The Treatment of Disproportion.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.
WEDNESDAY, Nov. 26th.—4 P.M., Mr. T. Pomfret Kilner: Modern Reconstructive Surgery.

ST. PAUL'S HOSPITAL, Endell-street, W.C.
WEDNESDAY, Nov. 26th.—4.30 P.M., Dr. David Thomson: Common Infections of the Genito-urinary Tract.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.
FRIDAY, Nov. 28th.—4 P.M., Mr. Harold Kisch: Frontal Sinusitis—Diagnosis and Treatment.

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY.
WEDNESDAY, Nov. 26th.—4.15 P.M. (at St. John's Hospital, 49, Leicester-square, W.C.), Clinical cases and a discussion on Thallium, to be opened at 5 P.M. by Dr. Roche Lynch and followed by Dr. Graham Little, Dr. Dowling, Dr. Wigley, and others.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.
TUESDAY, Nov. 25th.—3.15 P.M., Mr. Kenneth Walker: Hæmaturia.

THE CHADWICK TRUST.
FRIDAY, Nov. 28th.—5.30 P.M. (at the Royal Society of Arts, John-street, Adelphi, W.C.), Sir Robert Philip: The Outlook on Tuberculosis: Changing Orientation. (Malcolm Morris Memorial Lecture.)

INSTITUTE OF HYGIENE, 28, Portland-place, W.
WEDNESDAY, Nov. 26th.—3.30 P.M., Dr. W. F. Christie: The Prevention of Obesity.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
WEDNESDAY, Nov. 26th.—4 P.M., Mr. L. Ward: The Prevention of Accidents in Workshops and Factories.
THURSDAY.—4 P.M., Mr. Harold Chapple: Contraceptive Responsibilities of the Medical Practitioner.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINIC.
FRIDAY, Nov. 28th.—3.30 P.M. (at the Royal Infirmary), Dr. Brockman: Syphilis of the Alimentary Tract.

BRITISH EMPIRE CANCER CAMPAIGN POST-GRADUATE LECTURES ON CANCER (YORKSHIRE COUNCIL).
WEDNESDAY, Nov. 26th.—3.30 P.M. (in the Halifax Infirmary), Prof. W. Beckwith Whitehouse: Uterine Hæmorrhage, with Special Reference to Malignant Disease.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSES.

TUESDAY, Nov. 25th.—4.15 P.M., Dr. F. E. Tylecote: Low Blood Pressure.

FRIDAY.—4.15 P.M., Dr. Blair: Mental Defect.

ANCOATS HOSPITAL, Ancoats, Manchester.

THURSDAY, Nov. 27th.—11 A.M., Dr. E. W. Twining: Clinical Demonstration. 4.15 P.M., Dr. Arnold Renshaw: Systematic Pathological Investigation of a Case of Rheumatoid Arthritis.

Appointments

HEATH, W. E., M.B., B.S. Lond., D.O. Oxon., has been appointed Hon. Ophthalmic Surgeon to the Kent County Ophthalmic and Aural Hospital, Maidstone.

MASSIE, G., M.S. Lond., F.R.C.S. Eng., Asst. Surgeon, Orthopædic Department, Guy's Hospital.

OWENS, JAMES, L.R.C.S.I., Surgeon to Mercer's Hospital, Dublin.

RAPER, J., M.D. Manitoba, Medical College, Winnipeg, Man., Anæsthetist, The Infirmary and Dispensary, Warrington, Lancs.

Certifying Surgeons under the Factory and Workshop Acts: EVANS, E., L.R.C.P. Lond., M.R.C.S. (Llanybyther, Carmarthen); FORGIE, A. D., M.B., Ch.B. Aberd. (Stonehaven, Kincardine)

London County Council: KING, E. J. (Miss), M.B., B.S. Lond., L.R.C.P., Asst. M.O.; Dulwich Hospital. JENNINGS, C. M., F.R.C.S. Eng., L.R.C.P. Lond., Asst. M.O., Fulham Hospital. JACOBS, P., M.B., Ch.B. Glasg., Asst. M.O., Hammersmith Hospital. FISHER, H. M., M.B., B.S., Asst. M.O., St. Mary Abbots Hospital, Kensington. THOMPSON, A. R., M.B., B.S., and WESTWATER, J. S., M.B., Ch.B. Edin., Junr. Asst. M.O.'s, Park Hospital. BOWTELL, A. R., M.A., B.Ch., Asst. M.O., St. Charles Hospital, Marylebone. KNIGHT, S., L.R.C.P. Lond., M.R.C.S., Asst. M.O., St. Peter's Hospital, Vallance-road, E.1. ROANTREE, W. B., M.B., B.Ch. Dubl., Asst. M.O., Hackney Hospital. YOUNG, B. A., M.B., B.S., Asst. M.O., Archway Hospital, Highgate. THOMAS, T. P., M.B., Ch.B. Edin., Asst. M.O., St. Olave's Hospital, Rotherhithe. SIMMONS, J. H., M.B., B.S. Lond., Asst. M.O., Downs Hospital for Children. IVE, C., M.B., B.S. Lond., Junr. M.O., King George V. Sanatorium, near Godalming. SHAW, P. H. S. (Miss), M.B., B.S. Lond., D.P.H., St. Benedict's Hospital, Tooting, S.W.

Vacancies

For further information refer to the advertisement columns.

Aberdeen Royal Mental Hospital.—Jun. Asst. P. £300.

Aberdeen Royal Infirmary.—Jun. Asst. Surg. for Ear, Nose, and Throat Dept.

Albert Dock Hospital, Connaught-road, E.—Asst. Surgeon.

Bradford Royal Eye and Ear Hospital.—Jun. H.S. £150.

Birmingham General Hospital.—2 Res. Surg. Reg. to Special Depts. £100–£120—£140.

Bolton Infirmary and Dispensary.—Two H.S.'s. Each £150. Also Cas. O. At rate of £150.

Bury St. Edmunds, West Suffolk General Hospital.—Jun. Res. M.O. £150.

Cancer Hospital, Fulham-road, S.W.—H.S. At rate of £100.

Canterbury, Kent and Canterbury Hospital.—H.S. At rate of £125.

Cape Town University.—Assistant Anatomist. £750.

Chelsea Hospital for Women, Arthur-street, S.W.—Jun. H.S. At rate of £100.

Cheshire Joint Sanatorium, Market Drayton, Salop.—H.P. £250.

City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—Res. M.O. £250. Also H.P. At rate of £100.

Coventry and Warwickshire Hospital.—Res. Asst. H.S. £125.

Croydon General Hospital.—Hon. M.O. to Diseases of Children. Also Res. M.O. £200.

Dewsbury and District General Infirmary.—Sen. H.S. £200.

Downpatrick, N. Ireland, Down Mental Hospital.—Jun. Asst. M.O. £300.

General Lying-in Hospital, York-road, Lambeth, S.E.—Res. M.O. At rate of £100.

Golden-square Throat, Nose, and Ear Hospital, W.—Hon. Reg. Also Hon. Clin. Asst.

Hampshire County Council.—Asst. County M.O. £600.

Hampstead General and North-West London Hospital, Haverstock Hill, N.W.—H.P. and H.S. Each at rate of £100.

Hospital for Sick Children, Great Ormond-street, W.C.—Part-time Jun. Cas. O. At rate of £150. Also H.S. and H.P. Each at rate of £100.

Hull Royal Infirmary.—Asst. H.P. At rate of £130.

Ipswich, East Suffolk and Ipswich Hospital.—H.S. £120.

Leeds, Killingbeck Tuberculosis Sanatorium.—Asst. Res. M.O. £250.

Lincolnshire (Kesteven) C.C.—Asst. County M.O.H. £500.

Liverpool, Royal Babies' Hospital, Woolton.—Res. M.O. At rate of £90.

Liverpool, Royal Southern Hospital.—Hon. Dental Surgeon.

London Temperance Hospital, Hampstead-road, N.W.—Cas. O. Also H.P. At rate of £120 and £100 respectively.

Maidstone, Kent County Ophthalmic and Aural Hospital.—Ophth. H.S. At rate of £200.

Manchester, Ancoats Hospital.—Part-time Med. Reg. and Surg. Reg. Orthopædic H.S. All at rate of £100.

Manchester Babies' Hospital, Burnage-lane, Levenshulme.—Sen. Res. M.O. At rate of £125.

Manchester City, Abergele Sanatorium.—Med. Supt. £900.

Manchester Royal Eye Hospital.—Jun. H.S. £120.

Metropolitan Hospital, Kingsland-road, E.—Asst. M.O. to X Ray and Electrical Dept.

Miller General Hospital, Greenwich-road, S.E.—H.P. and H.S. Each at rate of £125. Also Out-patient Officer. At rate of £150.

Monmouthshire County Council.—Two Asst. M.O.'s. Each £500.

National Hospital, Queen-square.—H.P. £150.

Nelson Hospital, Merton, S.W.—Res. M.O. At rate of £100.

Newcastle-upon-Tyne Royal Victoria Infirmary.—H.S. to Skin and Venereal Dept. At rate of £50.

New Zealand, Hawkes Bay Hospital, Napier.—Pathologist. £750.

Norwich, Jenny Lind Hospital for Children.—Res. M.O. £120.

Nottingham City Infirmary, Hucknall-road.—Two M.O.'s. Each £350.

Plymouth, South Devon and East Cornwall Hospital.—H.P. Also H.S. to Casualty and Special Dept. At rate of £120 and £100 respectively.

Prince of Wales's General Hospital, N.—Hon. Clin. Assts. to Various Departments.

Princess Louise Kensington Hospital for Children, St. Quintin avenue, N. Kensington.—H.S. At rate of £100.

Queen's Hospital for Children, Hackney-road, E.—H.P. At rate of £100.

Queen Mary's Hospital for the East End, Stratford, E.—Res. M.O., H.S.'s, H.P.'s, &c. At rate of £200, £150, and £120 respectively.

Richmond, Surrey, &c., Joint Isolation Hospital Committee Hospital, Mogden.—Res. M.O. £400.

Royal National Orthopædic Hospital, Great Portland-street, W.—Hon. Asst. Surg.

Sheffield, Children's Hospital. Third Res. M.O. £100.

Sheffield Royal Hospital.—Ophth. H.S. Also Res. Anæsthetist. Each at rate of £80.

Sheffield Royal Infirmary.—Ophth. H.S. £80–£100.

Somerset County Council, Sandhill Park, Bishop's Lydeard, nr Taunton.—Med. Supt. £850.

Southport General Infirmary.—Jun. H.S., &c. £150.

St. George's Hospital, S.W.—Sen. and two Anæsthetists.

Sunderland, Durham County and Sunderland Eye Infirmary.—H.S. £350.

Todmorden Borough.—M.O.H. and School M.O. £800.

University College Hospital, W.C.—Hon. Clin. Asst. Also Hon. First Asst. to Special Depts.

Warwick, Hertford Hill, King Edward VII Memorial Sanatorium.—Jun. Asst. M.O. At rate of £200.

West Bromwich, Hallam Hospital.—Res. H.P. £250.

West London Hospital, Hammersmith-road, W.—Non-Res. Cas. O. £250. Also H.P., H.S., and Aural and Ophth. H.S. Each at rate of £100.

Weston-super-Mare, General Hospital.—Res. H.S. At rate of £150.

West Riding Mental Hospital, Starthos Hall, Kirkburton.—Asst. M.O. £400.

Wigan Royal Infirmary.—Res. Med. and Surg. Officer and Registrar. £250.

Willesden General Hospital, N.W.—Hon. Clin. Asst. to Surgical Out-patient Dept.

Woolwich and District War Memorial Hospital, Shooters Hill, S.E.—H.P. At rate of £100. Also Part-time Pathologist. £300.

Wrexham and East Denbighshire War Memorial Hospital.—Hon. Surgeon to Ear, Nose, and Throat Dept.

Births, Marriages, and Deaths

BIRTHS.

RIDDELL.—On Nov. 16th, the wife of Dr. Renton Riddell (E. A. Shuttleworth, M.B.), of Baldock, Herts., of a son.

TERRY.—At Nyaunghla, Upper Burma, on Oct. 7th, 1930, to Helen Margaret, wife of Dr. Gordon Stuart Terry—a son.

DEATHS.

FRAZER.—On Nov. 15th, Ewan Richards Frazer, M.B., B.Ch.Oxon., of Lennox-gardens, London, and late of Frampost, East Grinstead.

STOKES.—On Nov. 13th, at Bedford, Alexander Haldane Stokes, Lieut.-Col., Retired, late A.M.S., aged 88.

WARD.—On Nov. 10th, at Dynevor-road, Richmond, Walter Alfred Ward, M.R.C.S., in his 83rd year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

DRIFFIELD COTTAGE HOSPITAL.—The urban council of Driffield is about to erect a municipal cottage hosptal, in addition to the already existing hospital. The cost will be £8000, and there will be 18 beds in two six-bed wards, two single and two double private wards, one of which can be used for children.

NOTES, COMMENTS, AND ABSTRACTS

TRACHOMA IN IRELAND.*

By Francis S. Lavery, M.B., D.O.M.S.,
MONTGOMERY LECTURER IN OPHTHALMOLOGY (1930), UNIVERSITY OF DUBLIN.

It is impossible to give even approximate figures of the incidence of trachoma in Ireland as there is no source from which they might be compiled. Of all the countries of the world whose inhabitants are subject to trachoma, this country is the only one where no official effort has been made to check its spread and ravages.

I started by looking through the case sheets of the patients who had attended at the Royal Victoria Hospital, Dublin, for the ten years 1919–1928. The numbers of new trachoma patients who presented themselves during these years were as follows:—

Year.	Cases.	Year.	Cases.	Year.	Cases.
1919	123	1923	115	1927	70
1920	118	1924	102	1928	98
1921	81	1925	117		
1922	130	1926	127		

The figures maintain a fairly level average over these years and it would appear that the disease has now reached a sort of equilibrium, neither increasing nor decreasing. Of course, a larger number of trachoma patients were treated each year, as each patient has to attend more or less regularly for over a year and they keep returning from time to time. These figures may not appear alarming, but when we consider the disability produced in these unfortunate persons we shall be appalled by the number who are rendered incapable of doing even a reasonable amount of work.

Out of these 1081 trachoma patients I only find the visual acuity recorded of 478. We must therefore take these 478 as being representative of the whole 1081. It seems to me probable that the reason why vision was not taken in a larger number of the unrecorded cases was that the state of the eyes made it difficult to do so. Of these 478, 114 had vision below 3/60, which is the standard required by the Blind Pensions Act. That means that 23·8 per cent. are unable to do work for which eyesight is required. In addition 137 (or 29·6 per cent.) have less than the blind pensions standard in one eye. This leaves only 47·6 per cent. with vision above 3/60 in both eyes. Vision above 6/36 was very rare indeed.

Prevalence in Institutions.

There is little room for doubt that the occurrence of trachoma has declined owing to improved housing and sanitation, and the generally raised standard of living, but this diminution applies only to the public at large and not to our institutions where the disease is still very prevalent. When I first started to inspect these I was amazed at the number of cases of trachoma I discovered which had previously been undiagnosed and which presented no symptoms until sought for. I have since ascertained that this has been the experience of other investigators. The fact is that the greater number of those attacked in their earliest years escape clinical observation and are not examined by an oculist until a complication arises. It would appear that some secondary infection is required before trachoma makes itself manifest. One investigator writes:—

> "Between the children infected and those who were not we did not notice any exterior difference either at the edges of the eyelids or at the *palpebral opening*. Turn over the upper eyelid, however, and the difference appears immediately."

It is, therefore, apparent that only by some system of methodical and regular inspection in our institutes can trachoma be detected.

In passing, I note that the age of infection appears to be higher among the institutional cases than among those in ordinary life where the father and mother are the source of infection. It is generally accepted that parents pass it on to their elder children in infancy, and later, when the parents have become more or less non-infective, the disease is passed on by the elder children to the younger.

In the course of my investigations I visited in all ten institutions for boys and girls, where I examined 917 subjects. I compare two orphanages for the sake of illustrating my point about the age of infection. In a boys' orphanage where the ages ranged from 4 to 8 years the trachoma percentage was 11·5 and even that was confined to the elder ones, whilst in a girls' orphanage where the ages ran from 4 to 18 the percentage was 20·5. The average age among the infected girls was 13 and none of the very young children was infected. This orphanage struck me as being very well run, but what are those in charge to do? They cannot isolate the infected girls, and they have no Swanley to which they can send them as in England. I take this latter orphanage to prove the necessity for inspection. Among the 117 girls examined 67 were free from external eye disease. There were ten cases of external eye disease other than trachoma or follicular conjunctivitis, 12 cases were being treated for trachoma, and above this I found 12 cases of previously undiagnosed trachoma and treatment of these for over one year has confirmed my diagnosis of that disease. A few of the cases I had put down as follicular conjunctivitis have also turned out to be trachoma.

Here are still more alarming figures from an institution in County Cork. Out of a total of 124 girls examined 31 had definite trachoma and 20 were marked as suspicious; that is, 25 per cent. of the girls had well-marked trachoma. I assisted Miss Euphan Maxwell in investigating the causes of blindness among the inmates of a blind asylum where it was impossible to make a detailed examination. Of 83 cases examined 15 (or 18 per cent.) owed their blindness to trachoma, no other cause claiming so high a figure. Through the courtesy of Dr. M. O'Leary I was enabled to inspect a number of Dublin schools, and compared with the above depressing figures it is somewhat consoling to note that out of 324 school-children examined the trachoma percentage was 1·8, and some of these schools were in areas where one might expect to find trachoma at its worst.

An Anti-trachoma Campaign.

There are three distinct ends in the anti-trachoma struggle that we can propose to ourselves:—

1. To prevent new infections by instituting a series of prophylactic measures in the family, in the schools, and in the institutions.
2. To seek out cases of latent trachoma and care for them from the first appearance of the malady.
3. To treat the trachomatous who present complications with a view to curing them of their trachoma as well as of the maladies superimposed.

When we consider that in our institutions throughout the country the infected and the uninfected are all herded together and the latter are exposed daily to danger of infection we must feel convinced of the necessity for action. In most of the institutions nothing is being done to protect the uninfected and very little towards treatment of the infected, the reason for this being largely that those in charge are completely ignorant on the subject. It is difficult to formulate a scheme for combating the evil. A great number of countries where trachoma is prevalent have adopted measures to combat the evil, because it is not only an affliction to the individual sufferers

* The Montgomery Lecture will appear in full in the January number of the Irish Journal of Medical Science.

but also a source of economic loss to the community. Families fall into misery as soon as the malady enters their dwellings, the breadwinner being forced to remain inactive for prolonged periods.

The formulation of a scheme of prophylactic measures can best be done by studying the methods employed in other countries, above all in those which have almost entirely rid themselves of the scourge. These methods may be divided into two categories: general measures and special measures. Among the first we may put the improvement of housing and a raising of the general standard of living. The latter is of great importance, as trachoma is essentially the malady of the indigent, for indigence brings want of cleanliness both in person and dwelling. In France, Russia, and Poland trachoma is a notifiable disease, but here we are faced with the difficulty that it requires a skilled ophthalmic surgeon to diagnose it with any degree of certainty in its early stages. There is also the danger of its being overdiagnosed and harmful caustic treatment applied, as frequently happens in India. In Egypt and Russia there are travelling hospitals for the purpose of teaching the local doctors as much as for the purpose of treating the disease. Countries such as Prussia, Hungary, and Czecho-Slovakia have extensive courses of instruction for the parish doctors. Notification is not much good unless treatment is made compulsory. This is done in China, and is forced on migratory labourers and prisoners in Czecho-Slovakia. In Turkey no one is allowed to work in a public place with uncured trachoma. Hungary, at the outset of the war, formed a trachoma regiment for the purpose of preventing its spread throughout the army and so that all cases might be collected together for treatment, and precautionary measures were to have been taken when demobilisation was being effected. This plan was knocked on the head by the revolution and collapse of the Central Powers, with the result that there was a terrible increase in trachoma in parts of Hungary after the war. From that country comes a proposal for the formation of industrial colonies for the trachomatous, also the suggested State support of families of patients undergoing treatment.

An English Model.

The methods adopted in England seem to me to serve as a more suitable model for our imitation than those of continental countries where conditions are so different from ours. In England the disease is steadily diminishing. Compare the figures of registered cases in the schools under the late Metropolitan Asylums Board of London. In 1912 there were 153 cases registered. Each subsequent year shows a reduction in the number of registrations and in 1920 the number was 26. The London County Council is to be congratulated on the success achieved in the area under its control. An ophthalmic school was founded near Swanley. This school takes in all cases of infectious eye disease and lately interstitial keratitis has been included because of the beneficial effects of fresh air and sunlight on that disease. To this school are sent all the cases of infectious eye disease that are recommended for treatment by the medical officers in the London area. Through the courtesy of Mr. M. S. Mayou I have had an opportunity of visiting this school. It is divided into a number of units, each consisting of three separate cottages. In the central one resides the mother or sister in charge. Here all the cooking is done and meals taken, and here also is the treatment room. The children live in this and the other two cottages. The trachoma unit is completely separate from the other cottages and is surrounded by a double fence. I asked did not the patients feel hurt by this segregation and was told that on the contrary they consider themselves the nobility of the place as naturally they are the oldest inhabitants. They attend separate classes and never come across the other inmates. The children are usually very happy at Swanley, and on more than one occasion have been detected trying to reinfect themselves from the others to avoid being discharged as cured.

I am satisfied that the only satisfactory method of treating trachoma is in a separate institute. The present method of a patient having to attend a hospital three times a week over a prolonged period of time is unsatisfactory. It interferes with the education of the school-children and no institute could afford the expense involved. The effect of the present system is that patients only attend spasmodically, when their eyes are giving them pain. Things can no longer be allowed to drift. At the orphanage where I inspected 117 girls and found 24 definite and some doubtful cases of trachoma I have during the last year and a half inspected each new inmate, placing those showing trachoma immediately under treatment. On re-inspecting this orphanage recently I found 11 new victims and 13 cases in which the diagnosis is still doubtful. There can be little doubt that these children succumbed because of their proximity to those already infected.

Application to Ireland.

If the establishment of an ophthalmic school is considered too big an undertaking we might set aside two of our existing orphanages, one for boys and one for girls, to which the infected could be transferred from other orphanages in Ireland. The achievement of this plan would go a long way towards the eradication of what I may call institutional trachoma but would not tend to diminish materially the disease outside. All my investigations among school-children have been carried out in Dublin, but I am informed by doctors practising on the Western seaboard, where the standard of living is very low, that trachoma is very prevalent there. At the international trachoma conference in Geneva attention was drawn to the fact that as one of the best methods in the struggle against trachoma is to attack it in early infancy the necessity of a precise diagnosis becomes evident. In the City of Dublin a system of medical examination has been established in the schools but only on a voluntary basis. While the public mind may not yet be prepared to accept the compulsory system the following plan might eventually lead to it. Extend the medical examination to the whole State and add a special examination by a qualified oculist. Direct the oculist (and this is the important point) in the case of the discovery of any infectious eye complaint to endeavour to induce the family of the sufferer to submit to an examination. Thus the root of the evil would be reached and the younger members of the family would come under treatment at an age when they could be readily curable. Treatment could then be properly carried out by a skilled nurse acting under the direction of an oculist, with only periodical inspection by him. In one of the girls' orphanages the sister in charge has been able to carry out directions, and with monthly visits by me satisfactory progress is being made.

NOISE AND ITS MEASUREMENT.

THE universal problem of noise is at its worst, perhaps, in New York, where it has been approached scientifically and thoroughly. A brochure called City Noise,[1] publishes the report of the commission which has been investigating it. A year ago a travelling noise laboratory began a cruise of the city to measure the intensity of sound in various areas. Two devices were used: a measure of deafening effect and a "noise meter" that registered intensity directly through a microphone. The masking effect of any given noise was determined by the intensity necessary to make a known tone audible above it. The amount of noise is the difference between this intensity and the intensity required in a quiet place. This indirect method, depending on the human ear, was a useful addition to and check on direct measure-

[1] Noise Abatement Commission, Department of Health, City of New York. 1930. Pp. 308.

ments. The unit of noise—the decibel—is approximately the smallest change in sound which the human ear can detect; it is not an absolute unit, but a symbol for the ratio of intensities. In general, the numbers of decibels measuring the difference between two sounds is ten times the common logarithm of the intensity ratio. An ordinary conversation has a loudness of about 60 decibels—that is to say, 10^6 times the least intensity the normal ear can hear. A total of about 10,000 observations was made, and in several places the aggregate noise was analysed by means of band-pass filters.

The results showed that riveting and blasting were the worst noises of New York, measuring 96 or 97 decibels, but the average noise of a subway express passing a station was 94 decibels, while a loud-speaker at its noisiest accounted for 79—an intensity 100,000,000 times greater than the smallest distinguishable sound. The exhaust of a motor lorry accounted for 77 decibels, and the automobile horn for 71. At these levels, conversation is difficult, study impossible, and normal sleep almost out of the question. The average noise level inside rooms in residential districts was found to be 31 decibels, and approximately half the noise came from outside the house. Under normal traffic conditions a sound had to have a loudness of 50–55 decibels to be heard, and in main streets this might rise to 75 decibels. An amusing comparison with sounds from the Zoological Gardens showed that while a roaring lion (87 decibels) would be audible in the streets for 20 or 30 feet, a Bengal tiger (75·5 decibels) might roar indefinitely without attracting the attention of passers-by.

Great improvements have been made by padding turnstiles at the stations and replacing traffic-police whistles by lights. A series of tests was made on standard motor-horns, and it was found that an adequate warning sound need not be startling or nerve-racking, and that the average horn was a great deal louder than necessary. Some of the horns could be heard ten miles off. Many horns were found to be unpleasant because of high notes, which could be filtered off. The only way to deal with construction and demolition noises seems to be prohibition during hours of rest and the provision of adequate mufflers on the intakes of air compressors. The Commission recommended a "noise squad" as part of the City Health Department, and an extensive educational campaign, for they realise that there is no quick solution of the noise problem; the coöperation of every manufacturer, employer, and employee is needed before any appreciable improvement can be effected.

INSTITUTIONAL DIETETICS.

RECENT intensive laboratory studies of the principles of nutrition and their application to human dietaries have demonstrated clearly the health-promoting value of specific foods and accessory food factors. The science of dietetics, if there be one at the present time, no longer rests on a basis of mere energy exchanges. The application of the modern knowledge of nutrition to the bulk feeding of human beings is frequently neglected even in institutions which cater for the young, the sick, and the infirm. We deplore the statement in the preliminary section of a small manual devoted to institutional dietetics[1] that little definite is known about the vitamins, and that an ideal food is one in which the proportion of carbohydrate to protein is great. An opportunity has been missed of attempting to improve the standard of nutrition of the considerable sections of the community that are regularly fed in institutions. The main contents of the book, however, are recipes which should prove valuable to housekeepers who cater for large numbers.

[1] Institutional Cookery and Dietetics. By Helen B. Weir, Glasgow and West of England College of Domestic Science. London: Longmans, Green and Co. 1930. Pp. 111. 3s. 6d.

BIRTH CONTROL CLINICS.

A MEETING of medical officers engaged in teaching contraceptive methods recently brought to light some important observations. The meeting took place on Oct. 10th, at the British Medical Association House, and was attended by medical officers of the birth control clinics that are affiliated to the Society for the Provision of Birth Control Clinics. There was also present a representative of the Mothers' Clinic, founded by Mrs. Marie Stopes, D.Sc. Answers were brought to a questionaire that had previously been circulated, relating to failures of contraceptive methods, pathological conditions, and hæmorrhage noted in patients who had used contraceptive methods for six months or longer, the pros and cons of douching, the kinds and average sizes of occlusive pessaries used, and the complaints made by husbands regarding the appliances used by women. The questionaires were answered with varying degrees of thoroughness by the different centres. Thirteen clinics were represented, but of these only nine produced figures that justified comparison. By these nine clinics (Aberdeen, Birmingham, Cambridge, East London, Newcastle, North Kensington, Manchester, Oxford, and Walworth) 6322 patients had been followed up, and their experiences are summarised in the following figures. There had been 685 failures among this total, but of these only 95 were unaccountable—i.e., occurred in cases where the prescribed technique had been conscientiously carried out. The remaining 590 failures were attributable to known causes, such as incomplete following out of instructions, lapses from continuous use of the method, deterioration or faulty appliance, or other causes. In addition to this series of 685, there was another group of 267 women who found the method taught them impracticable for various reasons. Such were æsthetic dislike, discomfort caused either to husband or wife, or other causes. Among the difficulties of the technique which is prescribed in the majority of cases (a combination of Dutch pessary, lactic acid ointment, and douche), first place must probably be assigned to douching, which presents difficulties in many homes in which there is little privacy and inadequate facilities for obtaining warm water at short notice. For these reasons the medical officers of the North Kensington Clinic no longer advise the douche, and have substituted in its place the use of a quinine and urea hydrochloride pellet as manufactured by Messrs. Parke, Davis and Co., for producing corneal anæsthesia. This is placed in the vagina above (i.e., on the cervical side of) the occlusive pessary. It is too soon, however, to say how this technique compared with that in which the use of a douche forms a part.

A notable fact that arose from this investigation was the complete absence of harmful sequelæ that attended the proper carrying out of the instructions. Among the 6322 women here reported the only case in which a pathological condition observed was that of a woman who attended the Rotherham Clinic; but this woman had been wearing her pessary continuously day and night regardless of whether there was any need for it.

There were only 50 complaints by husbands in this series. They related mainly to the fact that the anterior rim of the pessary was felt and that the lactic acid irritated the penis. It is hoped that this will be the first of an annual series of such doctors' conferences at which the year's results will be impartially summarised and presented.

THERMEGA ELECTRIC BLANKETS.

IN the notes on the London Medical Exhibition published on Nov. 8th last we said "the blankets are made to suit any voltage from 50 to 250 with adjustment." The Company inform us that their appliances are suitable for any voltage from 100–250 without adjustment and that "blankets or pads for 50 volts have to be made specially."

DEATH-BEARING FISH.

THE perils of bathing are not confined to shark-infested waters, and Mr. David Grieg's brief paper on thanatophoric fish [1] gives further support to those who distrust the sea and all its works. The larger weever, the smaller weever, and, according to some, the sand-weever, are to be found, he tells us, in British waters, and like the flounder prefer to bury themselves in the wet sands of the shallows. It appears, however, that injuries are rarely received through the bare skin of the foot, but usually fall to the lot of those who handle these fishes in unwary curiosity. The armature of the weever consists of five or six grooved spines upon the anterior dorsal fin, enclosed in connective tissue and sharply pointed. Glands are present in the grooves which secrete a transparent, acid fluid containing an alkaloid which has a selective action on nervous tissue. When the spine is driven into the flesh the integument yields to pressure and is thrust back towards the base, while the poison flows down the groove into the wound. Distressing symptoms supervene within a few minutes, beginning with acute pain and itching at the site of inoculation; as the pain spreads up the limb it becomes unbearably intense, there is respiratory embarrassment and sweating, noises in the ears, impairment of hearing, flashes of light before the eyes, intermittent pulse, and finally, delirium, which may end in convulsions and death. Even if recovery takes place after many hours of pain, improvement is slow and malaise may persist for months. Mr. Grieg thinks a case recorded last year by Schulman and Ravier in *Progrès Médical* was doubtful as an example of poisoning by thanatophoric fish. The symptoms described by these observers included retention of urine and paresis of the legs, which progressed into an ascending paralysis and led to death from asphyxia. In spite of his vivid description of the symptoms usually observed, Mr. Grieg offers no suggestions for the first-aid or subsequent treatment of the patient, whom he abandons in convulsions on the beach. Various empirical remedies, including potassium permanganate, were detailed in a paper on Fishermen's Diseases by Dr. H. Muir Evans, of Lowestoft, reported in THE LANCET, 1921, i., 517.

THE UNITED FRUIT COMPANY'S MEDICAL SERVICE.

THE United Fruit Company maintains hospitals, hospital dispensaries, and field dispensaries in Cuba, Colombia, Costa Rica, Honduras, Guatemala, and Jamaica. An idea of the magnitude of their medical services can be gathered from the fact that during the year some 27,000 patients were admitted to their hospitals, and 360,000 treatments were given at their dispensaries. The eighteenth annual report of the Company's medical department contains many original articles, as well as statistical information dealing with the general work of the institutions concerned. Especially interesting are the papers describing methods for the treatment and prevention of malaria. The use of plasmochin as well as quinine during or immediately after the acute attack is strongly advocated. Evidence is brought forward to show that small doses of plasmochin render subtertian gametocytes, which may be resistant to quinine, non-infectious for mosquitoes. Not only is there less likelihood of relapse when plasmochin is given as well as quinine, but there is less chance of spread of infection among the mosquitoes of the districts to which the patients repair on leaving hospital. Cases of food-deficiency diseases are reported, particularly beri-beri and night-blindness; the latter occurred among railway labourers, and was cured in from seven to ten days by a generous diet, including milk and cod-liver oil. The excellence of the report of this department obviously reflects the efficiency of the medical service rendered to the populations of the districts in which the company's interests lie.

[1] Edin. Med. Jour., November, 1930, p. 638.

WHEAT, FLOUR, AND BREAD.

THE late Prof. Harry Snyder was, for the first half of his career, in charge of the departments of agricultural chemistry and soils in the University of Minnesota. He afterwards joined the staff of a milling company and devoted his time to investigating agricultural, nutritional, and æsthetic problems connected with the production and consumption of bread. A selection of the numerous papers which he published in his lifetime is now collected in book form.[1] The subjects dealt with range from the selection of suitable wheats for cultivation to the nutritive values of various types of flour. From a medical point of view his discussion of the relative nutritive values of white and wholemeal flour is of particular interest. The production of white rather than of wholemeal flour is urged most strongly, largely on the grounds of economy, in that the waste of nutrient material following the ingestion of bran and offal by the human being can be avoided by feeding these by-products to farm animals. Technical problems dealing with modern methods of milling and grading flour are presented lucidly in a style which should appeal to the reader with no previous knowledge of the subject.

MORTALITY FROM GALL-STONES.

THE Metropolitan Life Insurance Company of New York has analysed the deaths per 100,000 of its policy-holders from gall-stones over a period of 20 years, with some interesting results. First of all it may be noted that there has been no recent improvement in the mortality from this condition, which agrees with the general results obtained from the United States Registration Area. The death-rate in the rural regions is about one-half that of the cities, namely 2·5 against 4 to 5—a difference which may be due to increased facilities for accurate diagnosis in the case of the cities. The variation as between the sexes comes out very strongly in these figures. It has, of course, always been recognised that gall-stones are more frequent among females than males, but in this analysis at various ages the female death-rate is shown to be nearly six times the male (2·3 against 0·4) in the group of 25 to 34 years, and four times (5·9 against 1·4) in the group 35 to 44 years. The actual relative incidence of gall-stones in the two sexes is usually considered to be about 3 to 1; what these American figures go to prove is that gall-stones are the primary cause of death more often in the female. The figures, unfortunately, do not enable us to decide whether gall-stone incidence is disproportionately high, as has been believed, among women who have borne children. Until the results of the 1930 census are made known, it is not possible to determine what in the United States is the proportion of mothers in the female population.

THE METABOLISM OF ACIDS AND BASES.

IN the Leyden lecture for 1930[2] Prof. A. Magnus-Levy deals with disturbances of the metabolism of acids and bases. He does not consider the acid-base balance nor hydrogen-ion concentration, ideas which he holds to be obscure and confusing. As far as it goes the treatment of the subject is thorough, but owing to the author's self-imposed limits most practical points have to be left unexplained. It would have been more satisfactory if Prof. Magnus-Levy had expanded his lecture before publishing it in book form.

[1] Bread. A Collection of Popular Papers on Wheat, Flour, and Bread. By Harry Snyder. New York: The Macmillan Company. 1930. Pp. 293. 10*s.* 6*d.*

[2] Von Basen und Sauren Beim Kranken Menschen. Leyden Lecture, 1930. By A. Magnus-Levy. Leipzig: Georg Thieme; 1930. Pp. 28. M.2.

GRENFELL MISSION HOSPITAL.—It is reported that Sir Wilfred Grenfell's Battle Harbour Hospital on the coast of Labrador has been completely destroyed by fire. Sir Wilfred was lecturing in Ireland at the time.

ADDRESSES AND ORIGINAL ARTICLES

OCULAR MUSCLES, MOVEMENTS AND JUDGMENTS.

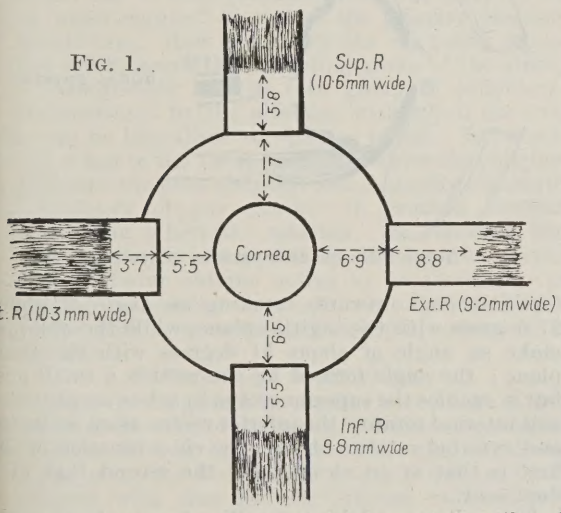
The Bradshaw Lecture delivered before the Royal College of Surgeons of England on Nov. 13th, 1930,

BY J. HERBERT FISHER, M.B., B.S. LOND.,

FELLOW AND MEMBER OF COUNCIL OF THE COLLEGE; CONSULTING OPHTHALMIC SURGEON TO ST. THOMAS'S HOSPITAL; CONSULTING SURGEON TO THE ROYAL LONDON OPHTHALMIC HOSPITAL.

FOR the purpose I have in view it is hardly necessary to describe the extra-ocular muscles in anatomical detail. As far as their origin is concerned it is sufficient to remember that each of the four recti muscles arises at the apex of the orbit from the tendinous zonule of Zinn, which surrounds the optic foramen and crosses the inner and lower part of the superior orbital fissure. The superior oblique arises in the same immediate neighbourhood; its rounded fleshy belly passes forward in the angle formed by the roof and inner wall of the orbit to a tendon which plays in the trochlea attached to the orbital roof just behind the internal angular process; by means of its pulley the tendon makes a bend to pass downwards, backwards, and outwards at an angle of about 51 degrees with the sagittal axis and so reaches its insertion on the postero-external quadrant of the eyeball. The inferior oblique arises in a small depression in the

FIG. 1.

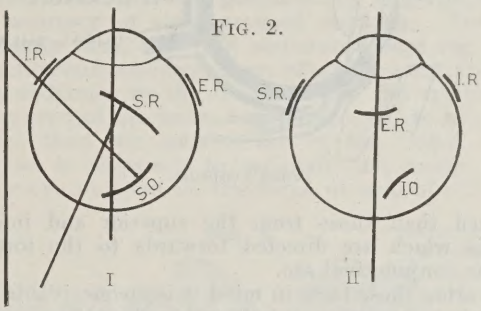


Scheme to show insertions of recti muscles with breadth and length of their tendons (after Whitnall).

orbital floor, immediately external to the naso-lacrymal groove; after passing beneath the globe and inferior rectus muscle it ascends to its insertion on the postero-external quadrant of the eyeball rather posterior to the attachment of the superior oblique, and therefore somewhat nearer to the optic nerve. The inferior oblique in its whole course makes the same angle with the inner wall of the orbit as the reflected tendon of the superior oblique and in lower vertebrates the superior oblique arises, like the inferior oblique, just behind the orbital outlet and thence passes directly to its insertion; the two muscles in such animals are much more obviously comparable than in the human subject they at first appear to be.

The outer wall of the orbit makes an angle of about 45 degrees with the inner wall, and in the primary position of the eyes at rest the visual axes are parallel to each other and directed straight forwards in the sagittal plane in alignment with the inner orbital walls. The combined length of its fleshy belly and tendon of insertion is approximately the same for each of the four recti muscles, but there are considerable differences in the length of their tendons; the fleshy bellies therefore differ not only in width but also in length and contractile capacity; in full contraction the muscular portion of each rectus shortens by about 25 per cent. The tendons, moreover, are attached

FIG. 2.



Insertion of ocular muscles (I) seen from above, and (II) seen from outer side (after Merkel).

at varying distances behind the sclerocorneal margin and lie in an irregular spiral (Figs. 1 and 2).

Fig. 1 applies to the recti muscles, and indicates the points in regard to their tendons and sites of insertion to which I have referred. Fig. 2 is introduced more particularly to show the attachments of the two obliques, and it will be observed that in the normal eye the posterior end of the superior oblique line of insertion transgresses on to the postero-internal segment of the globe.

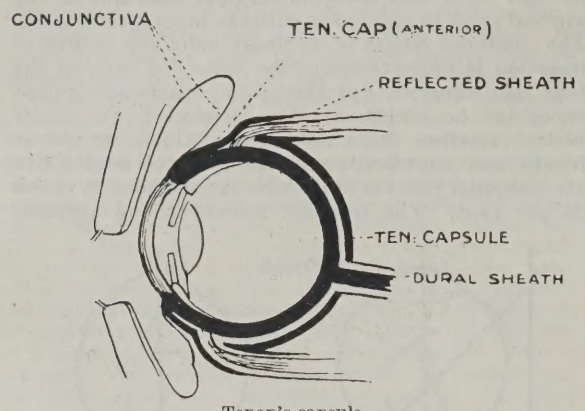
TENON'S CAPSULE.

Figs. 3 and 4 represent Tenon's capsule diagrammatically. The conception that in its movements the eyeball rotates within the cup formed by Tenon's capsule is of ancient date and difficult to eradicate from the mind; a very slight consideration of the anatomical arrangement of the capsule, however, shows it to be erroneous.

It is now certain that Tenon's capsule has no serous, or visceral, layer; it is a fibro-elastic membrane more dense posteriorly where it passes into continuity with the fibrous dural sheath of the optic nerve; anteriorly it is thinner and blends intimately with the deep surface of the ocular conjunctiva, and with it is attached to the globe at the sclerocorneal junction in the whole circumference of the limbus. Everywhere it is adherent by strands of loose episcleral tissue to the surface of the sclerotic coat. It is perforated posteriorly by the posterior ciliary vessels and nerves on their way to penetrate the sclerotic around the porus opticus; at the equator the venæ vorticosæ emerge through it, while in the ciliary area the anterior ciliary arteries and veins traverse it. Moreover, where the capsule is penetrated by the tendons of the extra-ocular muscles it sends a sheath along each tendon, which sheath passes into continuity with the perimysium; in the case of the superior oblique the sheath is traceable as far as the trochlea; off the sheath thus given to the recti muscles are reflected the check ligaments, by which over-action of the muscles

is prevented; the lateral check ligaments, passing respectively from the internal rectus to the vertical crest on the lacrymal bone behind the tear sac, and from the external rectus to the malar bone are better

FIG. 3.



Tenon's capsule.

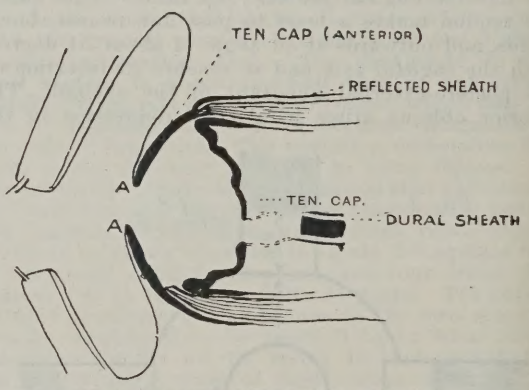
defined than those from the superior and inferior rectus which are directed forwards to the fornices of the conjunctival sac.

Bearing these facts in mind it is inconceivable that the eye can rotate as a ball within Tenon's capsule as a cup; were it to do so the whole intra-ocular circulation would be disturbed or the centripetal and centrifugal blood-vessels would be lacerated in any but the least movement, while the fibres of the optic nerve would be required to play freely up and down its dural sheath like a piston rod in its cylinder. The truth is that Tenon's fascia forms a primary bed in which the eyeball is ensconced, while globe and capsule move together upon the bed of fat, semi-fluid during life, with which the orbit is everywhere packed. The muscles of the eyeball are the only muscles of the body which enjoy the advantage of playing in an oleaginous lubricating medium; the precise results which they achieve show the orbit to be an ideal gear-box.

Nature and Production of Ocular Movements.

But not even on the cup of semi-fluid fat does the eye, ensheathed by Tenon's capsule, in the true sense of the word, rotate. In the first place, the eye is by no means a perfect sphere, and even if it be so regarded the point about which it moves is not its centre. Donders found this fixed point about which the eyeball moves to be 14·52 mm. behind the central point of the cornea in myopic eyes and 13·22 mm. in hypermetropic eyes. We may the better apprehend its situation if we locate it at 14 mm. as a rough mean for the emmetropic eye, remembering that the antero-posterior axis of such an eye measures 24 mm. All movement about this metacentral point should accordingly be regarded as an oscillation of the eye, not as a rotation. Unfortunately, the term rotation has become well entrenched. The terms rotation in or out, and up or down add to our confusion, and unnecessarily seeing that such terms as adduction, abduction, elevation and depression thought of in reference to the anterior pole of the eye are available, and ambiguous to no one. The use of these terms will leave the word rotation for a movement of the eye which never takes place in health when all the extra-ocular muscles are working normally. This potential rotation is a wheel-like movement on the antero-posterior axis; if it occurred and we imagine the eyeball as free to roll on the floor of the orbit and barrel-like in shape the term "rotation in" can be employed to describe the wheel-like movement which would cause the eye to travel towards the mid-line of the face, and the term "rotation out" for the wheel-like roll in the opposite direction; the terms "in-torsion" and "ex-torsion" have been used as alternatives, but suggest to my mind the idea of a corkscrew-like or spiral twist contorting the eyeball. Of the six extra-ocular muscles, when the eyes are in the primary position, which is the basal position from which to contemplate ocular movements, the lateral recti alone are in alignment with the movement which their contraction imparts to the eyeballs; the internal rectus is a pure adductor, the external rectus a pure abductor. The tendon of the superior oblique descends from the orbital roof, passes backwards and outwards over the top of the eye on the mesial side of the centre of movement to reach its scleral insertion near the posterior pole; its action is that of a depressor, an abductor, and an internal rotator; the inferior oblique, parallel in its course to the tendon of the superior oblique, but ascending from the floor of the orbit after having passed beneath the eyeball, is an elevator, an abductor, and an external rotator. The superior and inferior recti pass

FIG. 4.



Tenon's capsule after excision of eyeball.

forwards and outwards, making an angle of about 27 degrees with the sagittal plane, while the obliques make an angle of about 51 degrees with the same plane; the angle formed by the recti is a small one, but it enables the superior rectus to act as an adductor and internal rotator, the inferior rectus as an adductor and external rotator, though the chief function of the first is that of an elevator, of the second that of a depressor.

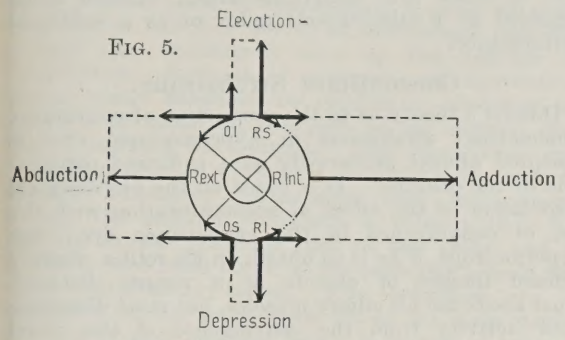
The scheme exhibited in Fig. 5 very ingeniously displays these muscular actions; in it variations in the length of the arrows are indicative of the amount of power in any direction which each muscle can contribute to the total required. The action of each muscle is set out in the Table; reference to it indicates

Superior rectus III. N.	Internal rectus III. N.	Inferior rectus III. N.	Inferior oblique III. N.	External rectus VI. N.	Superior oblique IV. N.
Adductor.	Adductor.	Adductor.	Elevator.	—	Depressor.
Internal rotator.	—	External rotator.	External rotator.	—	Internal rotator.
Elevator.	—	Depressor.	Abductor.	Abductor.	Abductor.

that in adduction of an eye, or in simultaneous convergence of the two eyes, as in near fixation, the

primary power is furnished by the internal rectus muscle, while precision and steadiness of movement are secured by simultaneous contraction of the superior and inferior recti, approaching their work as adductors not in the direct line of the movement to be imparted; the tendency of the one to elevate

FIG. 5.



Scheme to illustrate the action of the ocular muscles (after Marquez, from Fuchs).

the cornea will be neutralised by that of the other to depress it, while their individual capacities to produce wheel-like rotation on the antero-posterior axis will also cancel each other. It is interesting to note that each of these three muscles used in near fixation is innervated by the third cranial nerve, which supplies also the sphincter pupillæ and ciliary muscles called upon at the same time to adjust the focus of the eye for a near point. The abducting group of muscles will in convergence be acting as controls, and in turn preponderance will be given to them when required to restore the primary position of parallelism. How accurately the abducting group of one eye balances the adducting group of the other, and consequently also its own group of adductors, is demonstrated by the precision with which the two eyes can be lateralised to right or to left. Reference to Fig. 5 and to the Table again shows how the obliques supplement the pure abductor and mutually eliminate the tendency of one another to produce vertical movement or wheel-like rotation. In elevating the cornea the power is supplied by the superior rectus and the inferior oblique acting in conjunction; in depression the inferior rectus and the superior oblique form the pair of muscles to which preponderance is transmitted.

INNERVATION OF MUSCLES.

A study of the groups of nuclear nerve-cells in the fore part of the floor of the iter of Sylvius and posterior part of the floor of the third ventricle (Fig. 6) shows that the group for the superior rectus is in immediate contiguity with that for the inferior oblique, and that the group for the inferior rectus and the fourth nerve nucleus which innervates the superior oblique are in similar immediate anatomical relation to each other. In Fig. 6 it will be observed of the third nerve nucleus that only those fibres which arise from its posterior part and are destined for the supply of the inferior rectus decussate to form a bundle of the oculomotor nerve of the opposite side; this arrangement obviously harmonises with the crossing, dorsally to the iter, of the two fourth nerves, which supply the superior obliques. The posterior longitudinal bundle passes ventrally to the successive nuclei and links them together, while fibres which cross the median raphe from each sixth nerve nucleus to the opposite third nerve nucleus are, no doubt, an essential part of the mechanism for conjugate lateral movements. Once again referring to Fig. 5 we observe how the quota of wheel-like movement and of adduction which the superior rectus would tend to produce is antagonised by the tendency of its associate in elevation, the inferior oblique, in the opposite direction, and similarly in the case of the combined depressors the inferior rectus and superior oblique. When the two elevators are in preponderance the two depressors are in action as controls, and vice versa.

HARMONY OF OCULAR MOVEMENTS.

If the advantages of binocular vision are to be available, and diplopia is to be avoided in all parts of the fixation field, the greatest precision of ocular movement is obviously essential; these advantages are preserved in the primary parallel position of the visual axes by the tone of the extraocular muscles; in all other positions by the precision and accuracy of their grouped working. Yet we constantly hear and read statements implying that adduction and convergence are effected by the internal recti, abduction by the external recti. No movement of any part of the body, I imagine, needs to be more precise than the convergence of the visual axes, such as is necessary to maintain the image of a needle eye or point on the fovea of each of our two

FIG. 6.

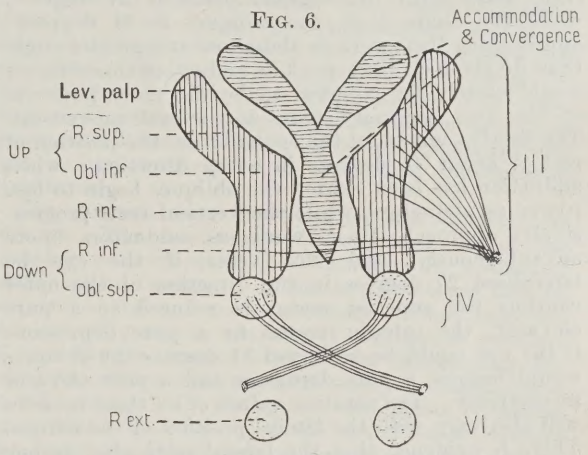


Diagram of the probable position of the nuclei of origin of the fibres to the ocular muscles in the IIIrd, IVth, and VIth nuclei (after Parsons).

eyes simultaneously. Two single strap-shaped muscles like the internal recti, operating in the direct line of the movement to be imparted to the eyeballs, could never effect this. The internal rectus, while it is the main antagonist of its fellow external rectus, is greatly its superior in power; we have already seen that it is the more bulky of the two muscles, that its fleshy belly is both the longer and the wider, and that by reason of the more anterior insertion of its tendon in relation to the centre of movement it acts at greater leverage advantage than the external rectus. If we ignore the accessory adductors and abductors we are faced with the following paradox—viz., that if for an external concomitant strabismus a surgeon tenotomises the external rectus, and on the hypothesis leaves the powerful and powerfully attached internal rectus unopposed, he can correct by his operation only about 5 degrees of the squint; on the other hand, if for the treatment of an internal concomitant strabismus he tenotomises the internal rectus and leaves the far weaker external rectus unopposed, he can correct as much as 15 degrees of squint.

The total power of abducting the eye must be equal to the total power of adducting it; the total power of elevation must be equal to the total power

of depression; potential power of wheel-like movement in (rotation in) must cancel potential power of wheel-like movement out (rotation out). The power of abduction of the external rectus supplemented by the accessory power provided by the combined action of the two obliques must be equal to the power of adduction of the internal rectus supplemented by the accessory power of the combined action of the superior and inferior recti. The external rectus being a weaker muscle than the internal rectus, the obliques contribute more to abduction than the vertical recti to adduction, and the necessary balance is achieved. Were it not so life would be intolerable from confusion of vision and the discomforts which ocular strain would induce. We now see that when the external rectus is tenotomised the adducting group is still considerably opposed by the accessory abductors; when the internal rectus is tenotomised the abducting group is opposed only by the accessory adductors, a much weaker pair of muscles for adduction than the oblique pair for abduction. Our operative experience therefore agrees with what we would expect. The angles in Fig. 7 themselves suggest this inferiority of the supplementary adductors to the supplementary abductors; the angle α which the vertical recti make with the sagittal plane is 27 degrees, while the angle β of the obliques is 51 degrees; approaching their work as abductors at a greater angle than do the recti their work as adductors the obliques would clearly be expected to be the more powerful of the two accessory pairs for lateral movement. The total excursion of the eyeball from the position of rest is about 45 degrees in every direction; when adduction has been started the obliques begin to lose power as abductors, while the vertical recti progressively approach their work as adductors more advantageously, and vice versa—if the eye be lateralised 27 degrees in the direction of the outer canthus the superior rectus is reduced to a pure elevator, the inferior rectus to a pure depressor; if the eye could be adducted 51 degrees the obliques would become a pure depressor and a pure elevator respectively. The rotation values of all these muscles will also vary with the lateral position of the cornea. There is evidence that the lateral recti also, as one would expect, acquire rotation power when the eye is directed into the upper or the lower part of the fixation field; if the external rectus is paralysed the false image remains erect only as long as the eyes are kept in the horizontal plane, or the paralysed muscle is not actively called upon; a tilting of the false image occurs when the paralysed external rectus is required to assist in turning the eye either upwards and outwards, or downwards and outwards; a slight wheel-like movement of the eye has been produced by the oblique muscle concerned in these positions when the opposing wheel-like contribution of the external rectus is absent by reason of its paralysis. It would also seem that when the cornea has risen above the horizontal level as the eye is elevated the two lateral recti in combination begin to contribute to the power of elevation, and conversely, that they will become supplementary depressors when downward movement has been initiated by the inferior rectus and the superior oblique.

We are now able to realise that even in the primary position of rest there is no extra-ocular muscle which is not by its tone essential to maintain the balance of the eye with which it is immediately concerned, and the harmony of that eye with its fellow. There can, in my opinion, be no movement in any direction imparted to an eyeball in which everyone of its extra-ocular muscles is not implicated, either as an active power or as a controlling influence. Marvellous indeed must be that musculature when we reflect that two eyes have to make excursions in complete harmony to every part of the field and at constantly changing range of fixation, and still more mysterious the physiological mechanism by which this musculature is called into active operation, whether it be regarded as a subconscious reflex or as a volitional performance.

Concomitant Strabismus.

Donder's theory as to the production of convergent concomitant strabismus in hypermetropic eyes is accepted almost universally as a sufficient explanation of the disorder. It is based on the physiological association of the effort of accommodation with the act of convergence in the emmetropic eye; the hypermetrope, if he is to obtain on his retina sharply defined images of objects at a remote distance, must needs use his ciliary muscles, but must dissociate their activity from the convergence of the visual axes with which the act of accommodation would, under normal conditions of focus, be inevitably associated; failure to accomplish this dissociation must result in convergent strabismus, one eye becoming the eye fixing the object under contemplation, the other converging at the appropriate angle and its vision being suppressed in order to avoid diplopia. That eye will unconsciously be selected as the converging one which for any reason is the less effective of the two for vision; this it may be through its being the subject of a more gross or more complicated error of focus than its fellow, or by some defect of transparency in its media or deficiency or disorder in its percipient elements.

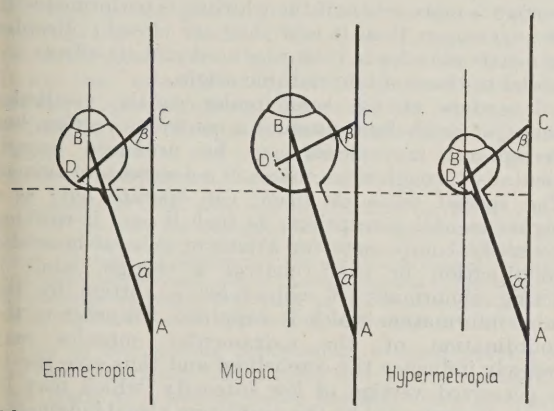
The conception of a higher fusion centre in the brain may be a convenient assumption for the purpose of discussing unsolved problems, but in my judgment can be no more than this. Among all the injuries and diseases of the brain on record, I am unaware of any case in which a patient as the result of a local cerebral lesion has lost the power of stereoscopic vision without other disturbance of visual function; a series of such cases would be necessary to demonstrate the presence and situation of the "fusion centre" if it exists anywhere but in the brains of those who postulate it.

Donder's theory, however, does not go entirely unchallenged, and does not fully satisfy in all respects every case of convergent concomitant strabismus, while its insufficiency as an interpretation of divergent concomitant strabismus in myopes is still more conspicuous. It is stated that if we regard divergence as negative convergence, the association of divergent strabismus with myopia is explicable on Donder's theory, but this statement has, I feel sure, never carried full conviction to the mind of anyone who has seriously considered it.

While the absence of the necessity for full or any accommodative effort on the part of the myope to enable him to define an object at short range may deprive him of an incentive to the associated action of convergence, it seems to me to afford no explanation of the visual axes taking up a primary position of divergence instead of parallelism in the myope; in viewing, or attempting to view, a distant object neither the emmetrope nor the myope is making any effort with his ciliary muscles. It would seem unlikely, a priori, that the convergence muscles in myopic eyes weaken from disuse, seeing that the myope usually indulges excessively in work at short ranges, for which he considers his eyes particularly efficient, while occupations which require a full range of

distant vision necessarily interest him but little. It is suggested that in the higher degrees of myopia the cumbrous elongated eyeballs are accommodated more conveniently in the orbits, if each swings outwards to take up alignment with its orbital axis. This I think is approaching a point of some importance, but it is not to be understood that the myopic eyes volitionally take up this position of convenience; there is, I maintain, an anatomical reason quite adequate to explain a tendency to outward deviation on the part of the myopic eye. Fig. 7 supplies the solution. The emmetropic eye becomes myopic by stretching, but it is in the antero-posterior diameter particularly that enlargement occurs; the addition to length is made mainly by yielding in the posterior half of the globe and a tendency to a local bulge at the posterior pole is the chief contributory factor. The deformed eye is supported on the retro-ocular fat at the same depth in the orbit as it occupied before it started to become

FIG. 7.



Scheme to show variations in angles of approach of the extra-ocular muscles, determined by differences of refraction.

myopic; accordingly the myopic eye is prominent, and in high degrees of myopia so much so that it may suggest a proptosis. The result of the altered conditions will be that the angle BAC (Fig. 7) is diminished, while the angle ACD is increased; in consequence the power of the superior and inferior recti to act in combination as accessory adductors is diminished, while that of the two obliques to act as accessory abductors is increased—the balance of power between the adducting and the abducting groups of muscles is therefore disturbed in favour of the abductors, and once an outward swing of the visual axis has been initiated the power of the accessory abductors increases while that of the accessory adductors decreases with every degree of outward deviation which is achieved, so that as soon as a preponderance of the abducting group has been established it tends automatically to increase. Even the proptosed emmetropic eyes of a patient suffering from exophthalmic goitre are frequently found to be incapable of maintaining efficient convergence; it seems to me probable that the explanation of this symptom of Graves's disease is to be found in the anatomical derangement of power, which the proptosis has produced between the adducting and abducting groups of extra-ocular muscles.

That in the myopic eye the superior oblique does approach its work more transversely and therefore at greater advantage to act as an abductor is strongly supported by the well-known observations of Fuchs on the insertions of the external muscles of the eye. Fuchs found that in the myopic eye the tendinous insertion line of the superior oblique is directed more antero-posteriorly than in the emmetropic or the hypermetropic eye, and that in the myopic eye its posterior limit does not cross the mid-sagittal plane of the eyeball, so that the whole of the line of insertion is confined to the postero-external quandrant of the globe.

It appears, therefore, that in the myope, in whom the balance of power is anatomically disturbed in favour of the abductors, parallelism of the two eyes as the primary position of rest can be obtained and maintained only if active nerve impulses inciting to contraction are constantly imparted to the adducting group; the incentive to these unwonted impulses will never be strong seeing that the call for them is non-physiological; the images of distant objects obtained by uncorrected myopic eyes are indistinct and easy to be ignored, so that avoidance of conscious diplopia is easy, while if one eye from any cause fails to contribute a practical share to binocular vision the position of greatest comfort will be assumed—i.e., a divergent strabismus will become established. In the flattened hypermetropic eye, where Donder's theory is more satisfying, consideration of Fig. 7 suggests that the changes in the muscular angles will be exactly the reverse of those which occur in the myopic eye—in the hypermetropic eye the balance of power is upset in favour of the adducting group, and I see no reason for entirely ignoring this fact in the consideration of convergent concomitant strabismus.

The position may be summed up concisely as follows. The simultaneous harmonised use of the focusing muscles with the adductors is a natural physiological function. If the hypermetrope fails to acquire the habit of accommodating without innervating his adductors a convergent strabismus results; if the myope cannot succeed in innervating his adductors without the stimulus which accommodation would supply a divergent strabismus results; anatomical disturbance of the extra-ocular muscles is a factor in each variety of concomitant strabismus, and especially conspicuous and primary in the case of the myope. Our operative treatment of concomitant strabismus is logical only if we concede that anatomical derangement is one of the chief elements in its production.

Ocular Contributions to Equilibrium.

Visual judgments and information derived from impulses generated in the extra-ocular muscles are elements which contribute to our sense of equilibrium. A picture of everything in the field of vision is formed on each retina simultaneously, and the image of each object in the field is projected outwards along the secondary axis passing through the nodal point of the eye to its correct position in space. Our visual appreciation of their relation to one another of the objects in space by which we are surrounded is known as objective orientation. In men and primates which enjoy the advantages of stereoscopic binocular vision, accuracy of alignment of the two eyes dependent on their perfect muscle balance is essential, or the information derived from one eye will contradict, not supplement, that derived from the other; in consequence the diplopia and false judgments will be so disturbing that the patient will prefer to close one eye and depend upon such restricted information as he can obtain by monocular vision. Objective orientation, then, is a purely visual function operative only when retinal stimuli influence consciousness as highly organised visual perceptions; as far therefore as

it is contributory to our sense of position and equilibrium it differs from articular and muscular sense, and from the guidance which we derive from the semicircular canals; these stimuli acting subconsciously are not under volitional control, and except during natural or artificial sleep are at all times operative. Assuming that we have a correct sense of body balance, and of the position of the head, it is however also necessary that our external eye muscles shall be accurately coördinated if by the sense of sight we are to estimate our personal relationship to objects in the world around us. By the muscular sense of our extra-ocular muscles we learn, subconsciously, the position of our eyes in our heads, and their alignment in regard to external objects; this is what is meant by the term subjective orientation, disorder of which function results in false judgment of our own position and a sense of want of balance or giddiness which is not experienced as the result of the conscious processes which constitute false objective orientation, or as it is sometimes called false projection. If the balance of our eye muscles is disarranged we must inevitably draw erroneous inferences, because, unknown to us, the premisses are false, while if definite ophthalmoplegia externa be present diplopia from false projection will complete our confusion.

The relation between the values of objective and subjective orientation is interesting. Occasionally a patient is met with who having developed paralysis of a muscle—e.g., the external rectus in his better seeing eye—still prefers to employ this eye and avoids diplopia by covering the non-paralysed eye of less visual acuity. If this has been his habit for any length of time testing will reveal that the patient is the subject of confused judgments when made to use the non-paralysed eye alone, and he walks unsteadily if he attempts to guide himself with this eye. Presumably he has established a new sense of values for the musculature in the interest of his paralysed eye. The existence of such cases suggests that the eye plays only a subsidiary part in the maintenance of equilibrium; a patient who has totally lost one eye experiences no sense of vertigo, and it appears to be not difficult to learn to use one eye for guiding our movements, even when its musculature is in a state of disorder. Nevertheless objective and more conspicuously subjective orientation do play a part in the maintenance of balance. Romberg's test is applied to tabetics with their eyes closed; if allowed to have his eyes in use a tabetic is able by visual judgments to nullify his tendency to sway when standing on a small base; on the other hand, any vertigo of purely ocular origin is relieved by closing the eyes. Labyrinthine nystagmus or the clonic spasm of compositor's nystagmus cause stationary objects to appear to be in oscillation. Labyrinthine nystagmus results from disordered influences generated in the semicircular canals; transmitted by the vestibular nerve these stimuli reach a group of neurons laterally placed in the upper part of the floor of the fourth ventricle, known as Deiter's nucleus, whence they are reflected along the nerves to the extra-ocular muscles. The cells of Deiter's nucleus are connected through the spinal cord and peripheral nerves with the skeletal muscles and receiving from them proprioceptive impulses dependent on their tone and muscular sense relay them to the cerebellum for the promotion of body balance. The nucleus is also put into communication by the posterior longitudinal bundle with the nuclei of origin of the third, fourth, and sixth nerves, particularly with those of the opposite side, though also with those of its own side. It is therefore reasonable to suppose that the extra-ocular muscles like other skeletal muscles contribute their quota of stimulus to the cerebellar centres via Deiter's nucleus, and that in a state of disorder they may help in this way to provoke a sense of vertigo; such an explanation might apply to the giddiness of insular sclerosis when nystagmus or diplopia are present. It has recently been suggested that the proprioceptive impulses generated in the extra-ocular muscles are transmitted through the third nerve, then by the communications which this nerve makes in the outer wall of the cavernous sinus to the fifth nerve, and thus to the nuclear cells of the brain stem. Clinical evidence, however, seems to support the view that the route is direct throughout by the third nerve. Where the Gasserian ganglion has been destroyed by disease, surgically excised, or its large sensory root cut behind the petrous bone, the patient, as far as I am aware, experiences no sense of want of balance or disturbance of his visual judgments. The schoolboy trick of bending the head on top of a cricket stump and whirling round it several times produces a sense of intense giddiness—this, of course, is mainly due to the semicircular canals, but the vertigo is more severe if the whirling is performed with the eyes open than it is if they are closed; disorder of ocular muscles is then produced and its effects are added to those of labyrinthine origin.

Disorders of the semicircular canals, vestibular nerve, or cerebellum produce a conscious vertigo, but vertiginous movements can be produced experimentally through these routes in a decerebrate animal. The special sense of vision can operate only as a higher mental perception; as such it can, if working normally, compensate for a lack of general muscular coördination or even control a vertigo, while if acting abnormally it aggravates a vertigo by the false information which it supplies. Disorder in the coördination of the extra-ocular muscles may reflexly influence the cerebellum and thus give rise to a perceived vertigo of low intensity, which may be further aggravated by the conflicting visual judgments. Accurate visual judgments may serve to arbitrate when the stimuli from other sources necessary to equilibrium are inharmonious, and may thereby suppress any sense of vertigo; apart from disorder of the ocular muscles the sense of sight will not itself produce any appreciation of true giddiness. Neither the sense of sight nor information from the ocular muscles is essential for the maintenance of equilibrium. Abnormal visual impulses generated in a disordered retina will produce no sense of vertigo if they are normally transmitted to and projected on the sensorium, though they may disturb visual impressions owing to metamorphopsia.

Visual Judgments in Sport.

A very simple form of visual judgment is called for in rifle shooting at the butts. The range being known the sights of the weapon are adjusted for the required distance. Ignoring the question of making any allowance for deflection of the bullet by air currents the marksman, rapidly adjusting his accommodation has now but to ascertain with one eye (the right if he shoots from his right shoulder) that the bull, the foresight, and backsight are in one straight line, and if he accomplishes this and is sufficiently expert to maintain an accurate weapon in this position while he pulls his trigger a bull's-eye must result. By reason of his capacity rapidly to exercise a large amplitude of accommodation the younger man has an advantage over the older, but a very emmetropic eye is hardly an essential.

In the very early days of flying a patient came to me who was building his own aeroplane; if it turned out

success it was his intention to fly it at the second meeting ever held in Great Britain. He was the subject of 6·0 D. of astigmatism and had never worn any correcting lenses. He told me he was absolutely accurate in detecting any departure from truth when he looked along the edge of a spar in course of preparation in his workshop. His joiner invariably confirmed his observation when he applied a straight edge at the point he indicated. No doubt his capacity in this matter was exceptional, as such an edge when focused by his astigmatic eye would be to him a particularly hard line in contrast with the very blurred definition of everything at right angles to it. I prescribed correcting cylinder lenses for the astigmatism, but advised my patient on no account to fly in them; the definition he would have obtained would, I felt sure, so disturb his accustomed judgments of distance that he would have made a false landing probably with disastrous results. This was his second plane. His first, at the urgent request of his relations, he had tried on his chauffeur, warning him only to taxi along the ground, and at once to shut off the engine if he did feel her lift off the ground, a thing at that early date practically unknown at the first attempt. So successful had he been, however, that the machine rose 40 feet into the air after a very short run, whereupon his chauffeur shut off the engine and smashed up the plane at a cost of some material injuries to himself and £2000 to his employer.

By the present date it has been recognised that perfection in the balance of the extra-ocular muscles is desirable in air pilots, and careful tests to exclude heterophoria are made of the eyes of candidates for the Air Force before they are accepted for training. It has been established by statistics that pilots who are the subject of heterophoria make bad landings, due to their imperfect capacity to estimate their height by vision. Practice and experience may, however, do much to compensate for visual deficiency.

A patient of mine who was an officer in the Royal Naval Air Service lost the central vision and upper part of the field of vision of his right eye by reason of a retinal detachment; though his position in the service no longer required him to do so, he continued to indulge himself in the pleasure of piloting machines, and had no particular difficulty in making good descents whether on to land or to water.

One of the leading professional billiard players of the last generation had a right eye which was highly amblyopic as it had squinted inwards when he was a boy; its central vision was less than 6/60; his left eye had full vision and he demonstrated to me his attitude when playing his shots at billiards. Being a right-handed player he took up such a position as enabled him to look along the line of his shot with his left eye—to do this he kept his eyes fully lateralised to the left. By much practice and making full use of the advantages of simultaneous contrast of light and shade he must have judged distances with an accuracy quite exceptional for one to whom stereoscopic vision was denied. A billiard player, fully equipped with vision, makes his bridge and adjusts his cue on it, for the shot he has selected, with the help of sight, but at the moment of delivering his stroke his eyes are fixed on that portion of the object ball with which he intends the cue ball to make contact; by long practice he has acquired the capacity by tactile sense and muscular sense alone to operate his cue, once he has it in position, with the required accuracy.

I believe the process to be similar in game shooting with a shot gun. In shooting at driven game or rabbits the experienced shot estimates binocularly the position and range of the object, and has little or no time to align his gun by the help of vision, using his sight eye if it is from his right shoulder that he shoots. I learn from treatises on shooting that the expert shoots with both his eyes open; that he does not know how he aims; that he should not dwell on his game or follow it with his barrel but learn to drop it as soon as his gun comes to his shoulder; moreover, seeing that to kill properly he has to shoot ahead of his bird he has no actual object on which to align his weapon by sight even if he wished to do so. The truth is that the sportsman judges by vision the position at which he anticipates his charge of shot will intercept the head of his bird, and by practice becomes expert in pointing his gun to that position, guiding himself by the articular and muscular sense of his arms. He really does not sight his gun at all. The American is an expert at snap shooting with a revolver. I am informed that it is his habit to point at his mark with the first finger of the hand in which he holds his weapon extended parallel with the line of his barrel and to pull the trigger with his second finger. He no doubt keeps his eyes fixed on the target, not uncommonly his armed antagonist, and supplements usefully such rapid visual judgments as he makes by the joint and muscular sense of his upper limb and its index-finger. The idea of the master eye is, I believe, a fallacy but one found very useful by the gunsmith. A man who has been shooting badly is asked by his gunmaker to point a gun at a certain mark some yards away; when he has done this the tradesman, looking along the barrel, finds that it is directed, say, to the left of the mark, and informs him that his left is his master eye; the gun is, of course, actually being pointed too much in the line of vision of the right eye and too little in that of the left; a cast-off gun is recommended, made and sold, and with it its owner makes better shooting. He is, of course, sighting the new gun no more and no less than he was the old one, but bringing it to his shoulder, guided by proprioceptive impulses, exactly as he did the former weapon the "cast-off" results in his charge of shot being thrown more to the right and better results are obtained. If he did as a matter of fact sight his new gun he would be looking along a barrel straight from breech to muzzle, and as far as vision is concerned the fact that the barrel was set at an angle to the stock could make no difference at all. What had gone wrong with the man was that he had gradually and imperceptibly to himself lost accuracy in coördinating his upper limb movements when bringing his gun to his shoulder, so that he was not, subconsciously, pointing it to the position upon which both his eyes were fixed, and to which he believed himself to be directing it. Master eyes are not invoked to explain bad billiards, and except in Gilbertian opera a cast-off cue is not suggested as an advantage to anyone playing the game and then only if it be in the hands of his opponent.

To be reduced to one eye is, however, a great disadvantage in judging the position and distance of an object, and in this respect is an impediment to good shooting. A patient from whom I had excised one eye told me that on one occasion when a gnat buzzed a yard or so beyond the end of the muzzle of his gun he only just refrained from firing: the insect subtended an angle similar to that of a bird at a range of perhaps 30 yards and he had thought it to be a partridge. In 1923 I extracted a secondary cyclitic cataract from the left eye of a man, 42 years of age; his right eye was a soft shrunken eye which had been useless all his life, deviated outwards, and for vision had barely perception of light. The eye upon which I operated did very well, and was corrected for distance by +13·5 D. spherical, with which it saw 6/5 well, and even some letters of 6/4. I saw this man two and a half years later and was surprised when he told me that he had been successfully shooting both pheasants and rabbits. He had, of course, never enjoyed the advanatge of binocular visual judgments, but his capacity with an aphakic left eye, statically corrected with a strong convex lens, leads one to think that for the pointing of a shot-gun trained tactile and muscular sense are the chief requirements, while sight

is used to judge the range and position of the mark upon which the vision is kept fixed. Certain occupations and sports involve the use not only of the muscles of the arms but also of all the big muscles of the trunk and lower limbs. In many of these instances accuracy of impact between the implement employed and the object to be struck has to be secured as the primary necessity. For such vigorous and difficult work the sense of vision is all important; no amount of muscular and tactile sense alone could be trained adequately to secure the precision demanded. When a navvy is using a sledge hammer on a steel wedge to break up a road foundation, having measured his distance he never takes his eyes off the top of the wedge as he swings his hammer and he never misses his mark. The sense of sight is essential in hitting a golf ball; all the big muscles of the body are called into play in the swing and the eye must never be taken off the ball, preferably the back of the ball; only if guided by vision can accuracy of impact between the face of the club and the ball be secured in so violent a movement. Similar visual guidance is essential for successful goal kicking at Rugby football. In cricket and lawn tennis, though the implements are bigger than in golf, the ball should be received on the middle of the bat or racket, while there is the additional difficulty that the ball is in rapid movement; in each of these games the ball, approaching the player at considerable velocity and liable to spin or swerve in its progress, has to be watched by the player's eyes on to his bat or racket from the moment it is delivered by his opponent, or his reply will be futile. The player does well to restrain the vigour of his muscular efforts at the outset; this is the process known as "getting his eye in," but its essence consists in establishing subconscious concord between his muscular efforts and his visual judgments. Sir James Barrie once narrated that he had twice played cricket and told us "that on the first occasion he made one run, but on the second he was less successful." Sir John Bland-Sutton, in his last book not only confesses his incapacity as a batsman, but being a scientific man is able to give the correct explanation of his failure; he states "that he could not avoid shutting his eyes when trying to hit a moving ball." It is noteworthy that in his early days Sir John had worked with George Critchett, and, fascinated with his manual dexterity, had so seriously contemplated becoming an ophthalmic surgeon that with Fuchs he studied for a year in Arlt's clinic in Vienna. Ophthalmology was a great loser, but this college gained much when he decided to devote his life to pathology and the science and art of general surgery.

It will be observed that I have not been discussing *how* the eye operates in guiding muscular efforts. To do this would involve not only physiological considerations, but also others which are psychological and metaphysical, seeing that concepts of time and space are involved. We should be launching on a large uncharted sea if I endeavoured to extend my observations in any of these directions.

Importance of Sight.

If anyone should accuse me of having dealt with a subject not immediately bearing on surgery, I would point out that vision and the function of the eyes is the paramount sense by which all science has been evolved. Prof. Abel Rey, of the Sorbonne, in a book published this year in Paris in the "Evolution of Humanity" series gives a comprehensive study of oriental science before the Hellenic period. After reviewing all that was known of mathematics, astronomy, and medicine by Chaldeans, Assyrians, Chinese, Indians, and Egyptians, he sums up his conclusions. According to Prof. Rey it is owing to the development of the sense of sight that man has attained to his supremacy in the animal world. The senses of smell, of hearing, of touch could never have sufficed or been elaborated to enable man to form any ideas of notation, of mensuration, mathematics, or any branch of science as we know it to-day; in many of the lower animals one or more of these other special senses is far more acute than in the human subject. The development of the neopallium is the great characteristic of the brain of man; to it have been transferred and in it have been elaborated functions hitherto performed at a much more lowly level in mid-brain nuclei; the large areas of cerebral cortex devoted to vision, visual memory, and ocular movements are anatomical confirmation of Prof. Rey's philosophical deductions. Vision, he says, is the scientific sense par excellence; human experience is in great part visual; would it be an exaggeration, he asks, to say that experience which is, or tends to be, scientific is entirely visual? No apology therefore need, I trust, be offered by anyone who is inclined to meditate on the function of the eyes.

THE MEDICAL TREATMENT OF ANTHRAX.

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The report of the Chief Inspector of Factories for 1929 shows that excision of a "malignant pustule" is still practised in this country. A comparison between this method and the purely medical treatment of cutaneous anthrax may therefore be serviceable. The cases here reviewed have all occurred in the same district and are, as nearly as may be, similar in occupation, site, and severity of infection.

Before proceeding to discuss these cases in detail, it may be of interest to give a short historical account of the methods of medical treatment which are now employed.

Serotherapy.—The use of large doses of anti-anthrax serum was first practised by Bandi, who published the results in two cases. One of these patients had become comatose after surgical treatment. An intravenous dose of 150 c.cm. of serum, followed later in the day by a further 50 c.cm. by the same route, was so successful that, after a further 40 c.cm. on the following day, the patient recovered. However, serum in large doses intravenously does not seem to have been employed again until Eichhorn, in 1919, recommended it in doses of 200 to 300 c.cm. every three to six hours in cases of anthrax septicæmia. From 1920 onwards Regan, Santee, Symmers, and others took the view that every case should be suspected as septicæmia from the outset and 200 c.cm. of serum became with them a usual preliminary dose, combined with local injections of 10 c.cm. of serum every four hours, applied just outside the blanched zone of the lesion.

In this country Eurich and Hodgson have used doses of 80 c.cm. and upwards, and the latter now advises a dose of 150 to 300 c.cm. as a preliminary repeated as may be necessary until the temperature falls to normal. Symmers has used a total of 1100 c.cm. in one case, and Hodgson has found it necessary to exceed this dosage. Eurich, on the other hand, has

never needed to use more than 300 c.cm. in any case occurring in the wool industry.

Chemotherapy.—Ehrlich suggested that salvarsan might be usefully employed in these cases, and Eurich and Becker adopted this suggestion with good results, either with or without serum as additional treatment. Eurich and Pijper have also used neo-salvarsan with success, and both advocate full doses (0·6 to 0·9 g.). In one case Pijper gave 0·9 g. daily for three successive days and a fourth dose after a week's interval, making a total of 3·6 g., equivalent to about 10 gr. of white arsenic. The patient was cured. Smaller doses have, in my very limited experience, been useless by themselves, though as an adjunct they appear to have some value, in single or double doses.

Local treatment by injection of 10 c.cm. of serum every four hours around the "pustule" is practised with excellent results by Regan, Santee, and Symmers, and the latter advocates the use of no other local treatment, believing that a sterile dressing is all that is necessary. Most writers, however, advise an antiseptic dressing. Eurich lays great stress on the importance of immobilisation, which is also used as a part of Pijper's routine.

Medical versus Surgical Treatment.

At the commencement of 1929 surgical measures at the Warrington Infirmary were abandoned; even the use of local antiseptic dressings was discontinued. This course was followed in the hope that general treatment could be stopped when bacilli were no longer found in the original lesion. It was supposed that if bacilli disappeared from the "pustule" then, even if the temperature was still raised, the further use of expensive doses of serum would be unnecessary and could be discontinued. The same applied to the use of organic arsenic and its attendant danger.

The results are of interest and are set out later. A short comparison of surgical and medical treatment is given in Tables I. and II. By courtesy of my surgical colleagues I am enabled to publish the results of surgical treatment (combined with serum) in 1927 and 1928 (Table I.). Table II. shows the results of medical treatment from the end of 1928 to the time of writing.

TABLE I.

Cases Treated Surgically, 1927–28.

Case.	Sex and age.	Site of lesion.	Days in hosp.	Result.
1	M. 31	Back of neck.	16	Cured.
2	M. 66	Right cheek.	32	,,
3	M. 47	Right arm.	45	,,
4	M. 25	Right arm.	23	,,
5	M. 36	Left eyelid.	62	,,
6	M. 36	Left neck.	40	,,
7	M. 56	Left neck.	4	Died.
8	M. 27	Left neck.	24	Cured.
9	F. 37	?	4	Died.†
10	M. 43	Right arm.	21	Cured.
11	M. 54	Right neck.	5	Died.†

† Died in coma.
Average time in hospital of cured cases: 32·8 days.

TABLE II.

Cases Treated Medically, 1929–30.

Sex and age.	Site of lesion.	Days in hosp.	Result.
M. 35	Left eyelid.	13	Cured.
M. 26	Left neck.	10	,,
M. 52	Left cheek.	7	,,
M. 61	Left neck.	8	,,*
M. 21	Back of neck.	8	,,
M. 41	Right eyelid.	4	Died.†
F. 36	Right cheek.	3	,,†
M. 22	Left jaw.	9	Cured.
M. 16	Left cheek.	5	,,
M. 33	Right forearm.	12	,,
M. 56	Right chin.	8	,,

* Died six weeks later of exfoliative dermatitis.
Average time in hospital of cured cases: 9 days.

Fifteen of the twenty-two cases occurred in the season December to May inclusive. The Chief Inspector of Factories was communicated with on this point, and by his courtesy I am permitted to publish the following extract from his reply: "Curiously enough, I have been looking into the matter myself, and in the five years 1925 to 1929, from December to May, the cases amongst tanners were 45 out of a total of 69. Similarly, in those cases occurring in docks, from November to April, 21 out of 27 occurred during that period." The same tendency to a seasonal increase of anthrax is revealed less conclusively in figures supplied by the courtesy of the manager of the United Tanners' Federation. In the past ten years 51 cases of anthrax have been reported to the Federation, and 34 of these occurred between December and May. These figures include some of the cases already mentioned above, while others have not come under the survey of this organisation. Further investigation as to a seasonal incidence in this country, and its cause, should prove interesting.

A more detailed account of the 11 medically treated cases is given below.

Case Reports.

All cases showed anthrax bacilli in smear and culture during the course of treatment. All serum was given intravenously except where (M) denotes intramuscular dosage or (T) intrathecal.

CASE 1.—Two days' infection. No initial lesion. Malignant anthrax œdema. Surgically inoperable and regarded as hopeless. Both sides of face and right side of neck swollen. From right eyebrow to right malar bone swelling was hard and purple. Treatment: first day, 60 c.cm. serum (M); second day, 80 c.cm. serum (M), 150 c.cm. serum, and 0·6 g. stabilarsan; third day, 160 c.cm. serum and 0·6 g. stabilarsan; fourth day, 80 c.cm. serum and 0·45 g. stabilarsan; fifth day, 80 c.cm. serum.

CASE 2.—Five days' infection. Well-marked eschar. Resistance apparently good. Treatment: first day 50 c.cm. serum and 0·6 g. stabilarsan. Second and fourth days 0·6 g. stabilarsan.

CASE 3.—Two days' infection. Well-marked signs. On fifth day, no œdema and no enlarged lymph glands; eschar had enlarged and fresh vesicles had appeared in areola. Treatment: Daily injection of 0·6 g. stabilarsan for five successive days.

CASE 4.—Malignant anthrax œdema four and a half hours after a blow from a hide. Treated within six hours of infection. With treatment resistance apparently improved, since eschar and areola appeared on third day. Less swelling and much more vesiculation (becoming pustular) on fourth day. Further pustulation on fifth day, but swelling and induration were less. Blood in pustules also. Œdema probably obscured any enlarged lymph glands. Discharged at his own request on eighth day. One month later an urticarial œdema observed; patient readmitted after five weeks, and died five days later from exfoliative dermatitis. Chronic nephritis found at autopsy, otherwise internal organs appeared normal. Arsenic found in liver, spleen, kidneys, and skin; none in hair or nails. Treatment: first day 0·6 g. stabilarsan; second day, 0·45 g. stabilarsan; third day, 0·45 g. stabilarsan, and 200 c.cm. serum; 0·45 g. stabilarsan; fourth day, 0·3 g. stabilarsan; 100 c.cm. serum and 50 c.cm. serum (M); fifth day, 0·3 g. stabilarsan and 100 c.cm. serum; sixth day 0·3 g. stabilarsan and 100 c.cm. serum.

CASE 5.—Five days' infection. General condition bad; pulse-rate 110. Considerable swelling of neck; albuminuria present. Treatment: first day, 0·45 g. neosalvarsan and 200 c.cm. serum. Second and third days, 200 c.cm. daily.

CASE 6.—Three days' infection. Commenced clinically as a typical staphylococcal pustule. Next day, anthrax œdema. Patient apparently comfortable on third day of treatment, but pulse uncountable and leucocyte count 10,400 per c.mm. On fourth day, restlessness, acute mental anxiety, severe præcordial pain, vomiting, dyspnœa, pulseless, clammy, then death in coma. No anthrax bacilli in smear or culture from lesion on day of death. Pure colonies of staphylococci found. Treatment: first day, 100 c.cm.

serum, 100 c.cm. serum (M) and 0·45 g. neosalvarsan; 200 c.cm. serum. Second day, 200 c.cm. serum.

CASE 7.—Four days' infection. Clinically a slight furuncle. Atypical anthrax bacilli in smear. Given 40 c.cm. serum as a precaution till culture result known. On second day apparently comfortable. No bacilli in smear or culture on third day, but staphylococci in large numbers. No result from guinea-pig inoculation. Sudden coma and death.

Post-mortem examination four days later: brain congested; dura mater adherent; no hæmorrhages. Heart and liver paler than usual, otherwise normal, no hæmorrhages. Kidneys paler than normal, no clear demarcation between medulla and cortex; a few dusky spots with blurred outlines (? hæmorrhages) on cut surface. Spleen enlarged, black, very friable and soft. Anthrax bacilli found in brain and meninges, not in other organs. Treatment: first day, 40 c.cm., second day, 200 c.cm. (M); third day, 200 c.cm.

CASE 8.—Four days' infection. Retained in hospital on account of rise in temperature and slight jaundice, with slight joint pains. Treatment: first day, 200 c.cm. serum and 0·45 g. neosalvarsan; second day, 200 c.cm. serum.

CASE 9.—Three days' infection. Lymph gland became enlarged four days after admission. Treatment: first day, 200 c.cm. serum; second day, 200 c.cm. serum.

CASE 10.—Four days' infection. Bacilli 250 to a field on admission. At noon on third day two uncapsulated, small, badly staining bacilli only were found in the whole smear. Headache and nausea, with vomiting once or twice in the first three days; headache easily controlled by aspirin. Temperature rising on third and fourth days. Lumbar puncture showed blood-stained cerebro-spinal fluid. Patient collapsed after intrathecal serum. Apparently moribund. Rigid neck and Kernig's sign from the time they were first looked for (fourth day) until the ninth day. On fourth night Cheyne-Stokes respiration appeared. Swelling and headache much less on fifth day. Severe rigor after serum on fifth day. No headache, and only slight swelling and Kernig's sign on seventh day. Rise of temperature and itching of skin on ninth day. Treatment: first day, 0·45 g. neosalvarsan; second day, 0·45 g. neosalvarsan; third day, 200 c.cm. serum; fourth day, 180 c.cm. serum and 20 c.cm. serum (T); fifth day, 100 c.cm. serum and 20 c.cm. serum (T).

CASE 11.—Three days' infection. Symptoms of a "cold in the nose" after first intramuscular injection. Severe dyspnœa and cyanosis after first intravenous injection of 20 c.cm. serum. Further attacks of dyspnœa and cyanosis after all other injections when the dose exceeded 10 c.cm. of undiluted serum. Feeble heart sounds and epigastric pulsation present one month after.

Discussion.

Certain results shown in the above résumé seem to be worth attention. In all cases in the series treated medically (although the notes are incomplete on this point), anthrax bacilli had disappeared or greatly diminished in the local lesion, but there was not necessarily a corresponding fall in the temperature. In Case 3, treated by arsenic only, bacilli disappeared and the temperature fell on the same day. In Cases 8 and 9 treatment was stopped when bacilli were no longer found in the "pustule," and both cases recovered, though the temperature did not return to normal until from one to three days afterwards. Cases 6 and 7, though the lesion was apparently free from anthrax, both died, and anthrax meningitis was discovered at autopsy in one. In Case 10 the initial lesion was apparently free of anthrax on the third day, but clinical evidence of anthrax meningitis was discovered on the following day.

The bacteriology of the "pustule," then, is unreliable as a guide to the progress of the disease. In Cases 6, 7, and 10 staphylococci were found in considerable numbers in the original lesion, and this may be the solution of the problem presented by an anthrax-free skin lesion in a patient profoundly infected by the bacillus.

Frank concluded, from a study of mixed anthrax infections in guinea-pigs and mice, that staphylococci inhibit the growth of *Bacillus anthracis*. Two of these cases revealed a mixed infection in what seemed from naked-eye appearances to be a staphylococcal lesion. In general, however, the original lesion is not pustular. "Striking," says Santee, "are the absence of pus, the absence of much pain or tenderness, the non-pitting or semi-solidity of this huge œdema, and in most of these cases the absence of enlargement of the draining nodes." Eurich and Hodgson express themselves equally emphatically on the misnamed "pustule"; and such indeed is the impression retained by me. The presence of pus, however, does not contra-indicate anthrax, as appears evident from Cases 6 and 7 especially and from the case reported by Cleland.

Enlarged lymph glands may on further investigation prove to be a comparatively late manifestation of the disease. They were not found in Cases 3, 4, and 9, and my impression (from memory only) is that they were also absent in Case 1.

"The development of a localised pustule indicates a degree of resistance to the bacteria, while a widespread œdema is evidence of failure of the tissue to prevent the advance of the infection." This statement by McGlannan appears to be supported by the clinical progress of Case 4; here, four and a half hours after receiving a blow from a raw hide, a malignant anthrax erysipelas occurred and advanced in spite of arsenical treatment. As the disease checked, so did the eschar and vesiculation appear and increase, while swelling diminished, until the maximum of vesiculation was reached on the fifth day. It will be seen that this case was first treated with stabilarsan, and that serum was not used until later.

The case for chemotherapy is enthusiastically summarised by Canwright, and Pijper's excellent results lead him naturally to claim that the use of organic arsenic is safe. I cannot go so far in my advocacy. Such small evidence as appears above gives support to the views of Eurich and Pijper that dull doses are necessary. I suggest that, when anthrax infection is cured, an immediate course of treatment by sodium thiosulphate should follow; but would not the use of serum in the first instance prove to be the shorter and safer treatment after all?

A single dose of neosalvarsan may not only have a beneficial direct effect, but its indirect action may also be of value. Walker's work on rabbits, though affording no proof of this, suggests it, but suggests further that repeated doses may interfere with natural immunising processes. If an arsenical is to be used, the clinical and biochemical examination of the patient must be made with care, and the previous history will also, of course, be important. Here a difficulty arises. The patient's own inability to give correct information may at times be a serious bar to the safe use of this remedy. Moreover, the question of compensation may introduce a complication. Doubtless the patient should give a correct personal history, but doubtless also he and his relations are under a temptation not to do so. In spite of these considerations, neosalvarsan should be borne in mind as an effective remedy in such hospitals as are called upon to treat anthrax without having a supply of anti-anthrax serum at their immediate disposal. Time is an all-important factor, and 12 or 24 hours saved in commencing treatment may make all the difference to the result.

ANTHRAX MENINGITIS.

Meningitis is usually regarded as a rare complication of cutaneous anthrax. Kauffman makes no reference to it, and Zingher in a single paragraph dismisses it as resembling ordinary meningitis when

it occurs. It will be noticed that of the 22 cases reviewed above four died in coma. Two of these were examined post mortem. One (Case 7, Table II.) was proved to have anthrax meningitis. The other (Table I., Case 11) not only contained anthrax bacilli in meninges, brain, heart, and liver, but also showed hæmorrhage into both parietal lobes and the cerebellum. Eurich has not infrequently found extravasations of blood between the brain and spinal cord and into the lateral ventricles. In Santee's cases "several autopsy reports showed in addition to the septicæmia . . . a pial œdema or congestion with the formation of small hæmorrhagic foci." Ellis reports a case of apparent recovery from anthrax in which headache was followed by death within six hours. Cerebral hæmorrhage and meningitis were found. Kraus and Spikes and Cleland found meningitis or congestion of the brain in both their cases. During life, however, meningitis does not appear to be a conspicuous part of the picture; in the four cases referred to above it was neither suspected nor examined for until coma was evident. In the one case of meningitis that recovered the bedside appearance did not suggest meningitis, although rigidity of the neck and Kernig's sign were revealed by examination after the cerebro-spinal fluid had shown evidence of meningitis. As regards the central nervous system, these cases have not therefore conformed to Zingher's description but rather to that by Symmers, who is alluding to septicæmia: "While the anthrax pustule itself offers a forbidding aspect, the appearance of the patient, on the contrary, is apt to give one the impression of extraordinary tranquillity."

In animals the onset of death may be masked almost to the very end. One wonders if the painlessness of the disease which is so evident in the local lesion may not have its counterpart in an analgesic condition of the central nervous system when the disease is general. It might be well to look for nervous symptoms in all cases, and not to spare the use of lumbar puncture for both diagnosis and treatment. It is possible that by such means the heavy dosage that is occasionally necessary might be much diminished.

Conclusions.

A comparison of the combined surgical and serum treatment of cutaneous anthrax, and of medical treatment alone, shows that recovery is quicker by the latter method. This comparison is made from cases which all occurred in the same district, under much the same conditions of infection as regards site and severity.

Amongst tanners, cutaneous anthrax tends to occur more frequently in winter and spring (and mainly amongst those employed on "dry" hides).

Organic arsenic, if used, should be given in large doses. Smaller doses do not appear to have sufficient therapeutic effect to justify their use, and their cumulative effect is probably as dangerous as that of one or two large doses.

Staphylococci appear to assist in inhibiting the growth in cutaneous lesions. The presence of pus is not necessarily a contra-indication of the existence of anthrax in a lesion.

Anthrax meningitis is apparently insidious in onset, and may be more common than is usually suspected.

I am indebted to Dr. H. A. Mitchell for the bacteriological reports cited in these cases, and to Dr. Robert Coope for his criticism and encouragement in the preparation of this paper.

(*Bibliography at foot of next column.*)

URINARY CREATININE AS A TEST OF RENAL EFFICIENCY.

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It is now generally recognised that the retention of creatinine in the blood is a constant accompaniment of advanced cases of nephritis and also that the degree of retention may be taken as an index of the degree of renal damage or impairment of kidney function. The normal amount of creatinine in the blood varies from 1 to 2 mg. per cent., and Myers and Killian [1] have shown that an increase of blood creatinine above 5 mg. per cent. points to a serious impairment of the excreting power of the kidneys and indicates a grave prognosis. In such cases death almost invariably follows in a short time. These observers conclude that in cases of advanced nephritis the blood creatinine furnishes a more reliable prognosis than any other test, and that in cases showing a considerable retention of urea, without retention of creatinine, ultimate improvement may take place. Patch and Rabinowitch [2] also, in a large series of observations, found that, in spite of high blood-urea values, symptoms of uræmia were usually absent when the creatinine values were normal or nearly normal.

Our knowledge of the physiology of creatinine is neither extensive nor accurate, but certain important facts are generally accepted. 1. It is probably a waste product and, on a meat-free diet, it is derived entirely from endogenous metabolism. 2. Its formation and excretion are normally very constant. 3. The daily output in man varies from 0·8 to 2 g. and the amount for a given individual varies but little, being almost independent of the protein intake. 4. The amount excreted appears to bear a definite relationship to the body-weight, so that large men excrete more than small men, and men excrete more than women. In infants and young children the amount is comparatively small, the adult level not being reached until after the fourteenth or fifteenth year.

(*Continued from previous column.*)

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TABLE SHOWING RESULTS IN TWENTY-SEVEN CASES.

Case.	Sex and age.	Disease.	Clinical condition (c.c.) and result.	Creatinine excretion in 24 hours (g.).	Percentage of minimum normal.
1	M. 68	G.U.	On diet of 2–3 pints milk daily	0·983	123
2	M. 33	„	„ „ „	1·417	177
3	M. 22	A.N.	Convalescent; c.c. satisfactory	1·735	217
4	M. 32	„	„ „ „	1·50	187·5
5	M. 34	„	3 weeks after onset	0·676	84·5
			6 „ „ „	1·30	162·5
			Clinically well.		
6	M. 24	„	3 weeks after onset	1·283	160·4
			5 „ „ „	1·08	135
			6 „ „ „	1·029	128·6
			Progress unsatisfactory. Persistent œdema and albuminuria. Six weeks after onset blood pressure 185/105. Fundi normal.		
7	M. 51	„	Convalescent; c.c. satisfactory	1·0	125
8	F. 20	„	1 week after onset	0·972	121·5
			Slight; early recovery.		
9	F. 42	C.N.	C.c. satisfactory	0·9	112·5
10	M. 55	A.N.	Convalescent; c.c. satisfactory	0·821	102·6
11	M. 16	„	3 weeks after onset	0·744	93
			8 „ „ „	0·8	100
			Slow improvement. Persistent slight albuminuria and hæmaturia.		
12	M. 65	C.N.	Persistent albuminuria with slight hæmaturia. Arteriosclerotic changes in fundi. B.p. 160/90	0·696	87
13	M. 64	„	Persistent albuminuria and œdema. Sys. b.p. 200. C.c. unsatisfactory. Dead five months after examination ..	0·638	79·7
14	M. 54	„	Condition unsatisfactory. Blood-urea 190 mg. B.p. 155/95 ..	0·531	66·4
			Three months later general condition much worse. Further progress unknown.		
15	M. 28	A.N.	2 weeks after onset	0·405	50·6
			3 „ „ „	0·52	65
			4 „ „ „	0·688	86
			5 „ „ „	0·91	114
			7 „ „ „	0·459	57·5
			11 „ „ „	0·468	58·5
			12 „ „ „	0·36	45
			Slow improvement. Persistent albuminuria and hæmaturia.		
			Reference remarks at end.* ..	1·456	182
16	F. 35	S.N.	4 weeks after onset	0·348	43·5
			4½ „ „ „	0·323	40·4
			5 „ „ „	0·37	46·2
			5½ „ „ „	0·464	58
			6 „ „ „	0·353	44
			7 „ „ „	0·297	37
			Persistent œdema and albuminuria.		
			Reference remarks at end.† ..	0·938	117·25
17	M. 22	A.S.N.	Admitted after indefinite history of three weeks' duration (see below.‡		
			3 days after admission ..	0·704	88
			7 „ „ „ ..	0·567	71
			10 „ „ „ ..	0·3375	42
			13 „ „ „ ..	0·441	52·5
			16 „ „ „ ..	0·405	50·5
			22 „ „ „ ..	0·405	50·5
			25 „ „ „ ..	0·4725	59·5
			Died of uræmia 28 days after admission. Autopsy showed large pale kidneys with changes of subacute nephritis.		

TABLE OF RESULTS—(*continued*).

Case.	Sex and age.	Disease.	Clinical condition (c.c.) and result.	Creatinine excretion in 24 hours (g.).	Percentage of minimum normal.
18	F. 32	A.N.	Admitted two months after onset (see below).§		
			3 days after admission ..	1·03	129
			5 „ „ „ ..	1·08	135
			5 weeks „ „ ..	1·038	130
			Slow steady improvement throughout.		
19	M. 39	C.N.	With acute exacerbation. Signs of old hæmorrhages in fundi. B.p. normal. (Not traced) ..	0·3	37·5
20	M. 62	„	B.p. 190/130. Arteriosclerotic changes in fundi. Death 3 weeks after examination ..	0·373	46·6
21	F. 12	S.C.N.	Œdema + +, albuminuria + +, blood-urea 196 mg. Retinitis, average b.p. 180/120.. ..	0·42	52·5
			Six weeks later	0·17	21·25
			Death one month after second examination.		
22	M. 37	C.I.N.	Acute exacerbation; uræmic neuro-retinitis; cardiac hypertrophy; b.p. 190/100. Examined 12 hours before death	0·27	33·7
23	F. 14	S.C.N.	Persistent œdema and albuminuria; average b.p. 200/122	0·289	36
			Five days later	0·118	14·75
			Death two days after second examination.		
24	M. 53	C.I.N.	B.p. 240/112; advanced changes in fundi. Discharged in very bad condition. Further progress unknown	0·243	30·4
25	F. 42	„	Cardiac hypertrophy; b.p. 190/125; blood-urea 270 m.g.; retinitis	0·154	19·25
			Death a few days later.		
26	F. 14	„	B.p. 280/210; hæmorrhages in fundi	0·17	21·25
			Death a few days later.		
27	F. 42	„	B.p. 228/152; hæmorrhages in fundi	0·0372	4·65
			Death two days later.		

G.U. = Gastric ulcer. A.N. = Acute nephritis. C. = Chronic. S. = Subacute. I. = Interstitial. B.p. = Blood pressure.

* CASE 15.—Dismissed with evidence of condition becoming chronic, but fundi and blood pressure normal. One year after onset general condition fairly good. No definite cardiovascular changes. Blood pressure 142/68. Urine showed moderate albuminuria and trace of blood. Creatinine normal.

† CASE 16.—Dismissed with œdema and albuminuria. Blood pressure normal. Slight arteriosclerotic changes in fundi. Œdema disappeared two months after discharge. Two years later showed evidence of chronic nephritis. Anæmic, no œdema, slight cardiac enlargement. No palpable thickening of arteries. Albuminuria +, with granular and hyaline casts. Blood pressure 126/90. Creatinine normal.

‡ CASE 17.—On admission, widespread œdema, albuminuria + +, hæmaturia, abundant casts, chlorides absent. Blood pressure 158/98. Retinal vessels full. Breathless and dazed. Impending uræmia.

§ CASE 18.—On admission, breathless, dimness of vision, bronchitis, albuminuria, slight hæmaturia. Blood pressure 180/110. Threatened uræmia.

Technique of Investigation.

During the past two years I have investigated the creatinine excretion in numerous cases of nephritis. The method I have adopted is as follows.

The urine is collected for 24 hours and measured in cubic centimetres. The estimation, which should be made as soon as possible after the termination of the collecting period, is carried out by Folin's method, using a Duboscq-Hellige colorimeter with a solution of pure potassium bichromate (24·55 g. per litre) as the standard. It is important to note that the

urine must be free from acetone and aceto-acetic acid. The result may be expressed in two ways :—

(1) As the *total amount of creatinine excreted in 24 hours.* Normally in an adult this should lie somewhere between 0·8 and 2 g. and in cases showing a very marked reduction in the output this method of expressing the result is entirely satisfactory. In Cases 26 and 27 (see Table), for example, in which the daily output was 0·17 g. and 0·0372 g. respectively, the figures are so far short of the normal that no further comment is necessary. Both patients were actually dying of chronic nephritis when the estimations were made.

(2) As the *percentage of the normal minimum output.* If 0·8 g. be taken as the normal minimum output, then a patient who excretes that amount in 24 hours will excrete 100 per cent. of the minimum normal. In the same way a total excretion of 1·6 g. will represent 200 per cent. of the minimum normal, while a total excretion of 2 g. (the maximum normal) will represent 250 per cent. of the minimum normal. In the two cases already referred to (Cases 26 and 27), the percentages would be 21·25 and 4·65 respectively. The figures here suggested are no doubt open to criticism. No account is taken of the weight of the patient, but the weight of a nephritic patient may be entirely fallacious when œdema is present, and as the calculations are based on the minimum normal output this objection is not a very real one.

In the Table the results are shown in 27 cases, including two cases of gastric ulcer. The latter are included for the purpose of comparison with nephritic cases. They showed no evidence of renal disease, and, at the time of examination, were on a diet closely approximating in food value to the diet of acute nephritics. Both showed a normal creatinine excretion. Cases 3, 4, 5, 7, 8, 9, and 10 progressed satisfactorily and were dismissed well. Case 6 drifted on to a subacute condition, and after three months' treatment was dismissed with albuminuria and some œdema. His creatinine output was good. He has not been seen again, but two years after he left hospital he was reported to be in fairly good health and working regularly. In Cases 11, 12, 14, 15, 16, and 19 progress was unsatisfactory and showed clinical evidence of the development of a chronic condition. Case 18 is still in hospital. Cases 13, 17, 20, 21, 22, 23, 24, 25, 26, and 27 were regarded as bad. With the exception of No. 24, who has not been traced, all were dead soon after examination.

An analysis of various types of nephritis shows that in acute nephritis the creatinine output may be normal or diminished. In those cases showing a definite diminution the output rises as the acute stage passes off if the case is pursuing a favourable course. If, on the other hand, the clinical features point to the development of a chronic condition, the output shows either a steady decline or a failure to rise to the high level usually found in favourable cases. In subacute nephritis—i.e., large white kidney with persistent œdema and albuminuria—a low creatinine output, though not necessarily of grave prognostic significance at the time of examination, probably indicates serious damage to the kidneys and the early development of cirrhotic changes. In established chronic nephritis, especially in those cases with cardiovascular and eye changes, the creatinine output may be taken as a reliable prognostic guide. In severe cases with impending uræmia the output is excessively low.

The Table includes 9 cases which terminated fatally. In all of these the creatinine output was abnormally low and the prognosis, on purely clinical grounds, was never in doubt. The test described may therefore be regarded as confirmatory, or perhaps even as a measure, of the degree of renal damage, even though it might appear to be superfluous in advanced chronic cases. In early chronic cases, on the other hand, where the clinical features are not sufficiently well developed to allow of an accurate prognosis, it is suggested that the test would be of some help in the endeavour to assess the degree of structural or functional renal damage. The test is one which can be easily and frequently performed, and the results, expressed as percentages of the normal minimum output for adults (and to which the term Creatinine Index might be aptly applied), seem to be of definite prognostic value. It should be borne in mind, however, that nephritis is a disease which demands a wide clinical outlook, that the prognosis of every case must depend primarily on a clear conception of the complete clinical picture, and that, until we have a more extended knowledge of the nature of nephritis, all tests of renal efficiency should be regarded merely as useful adjuncts in clinical investigation.

I have to express my indebtedness to Dr. A. W. Harrington, visiting physician, Glasgow Royal Infirmary (to whom I acted as assistant for some years), for permission to publish the results of this investigation. The cases examined have been under his care in his hospital wards. I have also to thank Dr. D. P. Cuthbertson, biochemist to the Infirmary, for granting facilities for carrying out the urinary examinations in his laboratory and for much helpful advice.

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CLINICAL AND LABORATORY NOTES

THE ACTION OF LIVER PREPARATIONS ON DIABETES.

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Blotner and Murphy [1] showed that certain aqueous extracts of liver and their concentrates cause a lowering of the blood-sugar when taken by mouth. They claimed that the extract from one pound of liver had an action on diabetics equivalent to some ten units of insulin. This naturally seemed of practical importance as well as theoretical interest. The results herein recorded, however, fail to confirm their conclusions.

[1] Blotner, H., and Murphy, W. P.: Jour. Amer. Med. Assoc., 1929, xcii., 1332; 1930, xciv., 1812.

As the liver extract which is claimed to be effective in diabetes is different from that used in pernicious anæmia, a special extract was prepared, as described by Blotner and Murphy. This was kindly provided by the British Drug Houses, and Dr. F. H. Carr has sent the following details of the method employed : "Liver taken quickly from recently slaughtered oxen was finely minced with a little water and the hydrogen-ion concentration adjusted to 4·8 with N/1 sulphuric acid. The mixture was kept for 16 hours at 35–40° C., and the clear filtrate removed. This was heated to 80° C. for 30 minutes, and the coagulated material was filtered off, washed with water, drained and dried in vacuo at room temperature ; 11½ kilos of ox liver yielded 6·8 g. of the product." This extract was tested in doses corresponding to one and two pounds of fresh liver (0·3 g. and 0·6 g. extract). As Blotner and Murphy show that the

action of their extract can be observed in three to eight hours, there was no need for prolonged investigation over several weeks.

The experiments were all carried out on a young diabetic man, aged 23, a "pedigree" insulin case. He has had the same diet and insulin, 24 units in the morning, 20 units in the evening, for four years, and has been the test subject for many experiments of this kind. It is usually possible to detect clearly the effect of a change of two units in his dose and always of four units. His blood-sugar fasting is about 0·23 per cent., is reduced to about 0·07 per cent. or 0·09 per cent. five hours after insulin, and rises again to about 0·23 per cent. nine or ten hours after insulin. The corresponding glycosuria is also very regular in its appearance and disappearance at certain hours. The effect of the liver extract was observed on him in two phases: (1) by giving the extract by mouth with the usual injection half an hour before breakfast to see if it produced any unusual hypoglycæmia; and (2) by giving the extract at midday to see if it prevented the usual recurrence of hyperglycæmia after the insulin action wears off in the late afternoon. At first the usual dose recommended by Blotner and Murphy was given, and later double the dose, corresponding to 2 lb. of liver. In not a single experiment was any difference in glycæmia or glycosuria observed from the comparable control days without the extract.

Therefore, on a typical uncomplicated case of diabetes of moderate severity I have been unable to detect any action from the use of a liver extract described as effective in reducing the blood-sugar. No experiments have been carried out on mild cases not requiring insulin, as I believe such experiments are less definite and more liable to error in judging the effect of a remedy on the essential diabetic process.

I wish to thank the British Drug Houses, Ltd., for preparing the special liver extract.

A METHOD OF REDUCING SUPRA-CONDYLAR FRACTURES OF THE HUMERUS.

By R. Y. Paton, M.B. Camb., F.R.C.S. Eng.,

ASSISTANT SURGEON, ROYAL NATIONAL ORTHOPÆDIC HOSPITAL; ORTHOPÆDIC SURGEON, NELSON HOSPITAL, WIMBLEDON, AND PRINCESS LOUISE KENSINGTON HOSPITAL FOR CHILDREN.

Sir Robert Jones's method of reducing supra-condylar fractures of the humerus is as follows:—

"The surgeon should grasp the child's wrist with the right hand and place the left hand around the upper arm, so that the thumb puts pressure on the lower end of the upper fragment, just above the elbow. The forearm should be extended and pulled in order to disengage the lower fragment. When this has been done the forearm should be supinated, and while the pull is maintained the arm should be flexed while the upper fragment of the humerus is pushed back. The arm should be flexed to 30 degrees, or as near 30 degrees as the swelling will allow."[1]

This method gives excellent results in the majority of cases, especially when there is little lateral displacement. In cases where there is much backward and lateral displacement it may fail and an alternative method may be required. The technique to be described may result in successful reduction in cases where open correction seems the only possible solution; it is certainly worth a trial before cutting down.

[1] Practitioner, July, 1930.

The child is anæsthetised and lies on his back. The surgeon stands on the side of the injured limb, which is raised with the humerus vertical, the hand and forearm being allowed to fall flexed towards the chest. The hand is steadied by an assistant or the anæsthetist. The surgeon interlocks his fingers round the flexor aspect of the humerus and so grasps the humerus firmly. The thumbs are placed vertically side by side on the dorsal aspect. Keeping the humeral shaft absolutely steady in the fingers, the surgeon now exerts pressure with his thumbs upwards and forwards on the lower fragment and guides it to its proper position. If the lower fragment is impacted it is disimpacted by increasing the deformity—i.e. extension at the elbow-joint. When there is lateral deviation more pressure is exerted by the appropriate thumb to correct it. The fragment will be felt to move upwards and then slip forwards and engage. The assistant does nothing but maintain the position as it improves—with the forearm supinated—under the surgeon's manipulation. When the surgeon is satisfied, by the relationship of his thumbs to his interlocked fingers, that the reduction is complete, he will find that he has obtained flexion to almost 30 degrees. The flexion is maintained by slinging the wrist under the chin, no splint or other retentive apparatus being necessary.

This method approaches the problem of reduction from above, and has several advantages. The lower fragment of the humerus is controlled by the thumbs and is gradually pressed into position, and its jagged upper extremity does not tear into the fibres of the biceps. The amount of manipulation required is reduced to a minimum and the unconsidered force of a powerful lever is dispensed with. (The chance of damaging nerves during reduction is infinitesimal. The local disturbance is very small, even in cases where considerable œdema and swelling already exist. The risk of ischæmia—fresh hæmorrhages not being commenced—is, therefore, reduced. The lateral displacement is much more easily controlled and corrected. Good hands and strong thumbs may be essential to success in these manipulations, but any surgeon who does much orthopædic work should soon develop these assets.

The method described has been successful in cases where other methods of reduction have failed and open correction has been considered. The presence of much œdema was not found to be an obstacle to reduction.

A CASE OF COR BIVENTRICULARE TRILOCULARE WITH TRANSPOSITION OF VISCERA.

By Stanley Davidson, B.A. Camb., M.D., F.R.C.P. Edin.,

REGIUS PROFESSOR OF MEDICINE IN THE UNIVERSITY OF ABERDEEN; LATE ASSISTANT PHYSICIAN TO THE ROYAL INFIRMARY, EDINBURGH.

Maud Abbot[1] reports only four cases of cor biventriculare triloculare in 850 cases of congenital cardiac disease which she has analysed. Three of the cases died in infancy. In no case is mention made of a complete transposition of abdominal viscera, as was found in the following case:—

The patient, a woman of 27, was admitted to the wards of the Royal Infirmary, Edinburgh, in September, 1928, while they were under my charge during the absence on holiday of Dr. A. Goodall. When first seen by me she was in the last stages of cardiac failure. I am indebted to Dr. H. V

[1] Abbot, Maud: Modern Medicine, 3rd edition, London, 1927.

Thwaites, her family doctor, for a very complete set of notes of her past history, of which a summary is appended.

HISTORY OF THE CASE.

The patient was born in 1901, and was one of a family of three; the first child lived for only 12 hours but the second was a healthy male. No difficulty was encountered during the birth of the patient, which was normal. She was fed on the breast. She began to walk and talk at the usual age, was clever at school, was always active, and never suffered from dyspnœa until after an attack of measles at the age of 9. This was the only infectious disease from which she suffered. After this attack she was apt to be breathless on slight exertion, but she never had any fainting turns. Her colour was high. From the age of 10 to 15 years, while still at school, she helped in the work of the house, and at the age of 15 she entered domestic service. In all the situations which she took she was hard worked, and though she was often breathless and occasionally had to spend a day in bed, she was never sufficiently ill to have to give up work and return home. She carried on her domestic service up to the age of 23, when she began to have fainting turns. These turns came on by day or by night, and were not always related to exercise; they frequently occurred after meals. They were characterised by sudden onset, nausea, palpitation, breathlessness, a feeling of choking and, in some cases, by unconsciousness. Many of them passed off suddenly—within half an hour.

On examination in 1924, at the age of 23, a systolic murmur was heard all over the præcordia, which was not conducted upwards from the aortic arch nor outwards from the mitral area. The point of maximum intensity was over the fourth costal cartilage at the edge of the sternum. Percussion of the left border of the heart revealed no dilatation, nor was the liver palpable. During the next three years she had numerous similar paroxysmal attacks. Some came on when at rest, and others after exertion. She was sent to the Royal Infirmary for examination, and the physician who saw her reported that a loud systolic murmur was present, best heard in the tricuspid and pulmonary areas, and that the red blood count showed the presence of a polycythæmia of 8,000,000. From the history that since early childhood the patient had had a high colour, and had been breathless on exertion, a diagnosis of congenital cardiac disease was made. No clubbing of the fingers was present—a point of some interest with such a long history.

Between 1925 and 1927 the patient returned to domestic service for periods of several months, but was always short of breath after exercise and on many occasions had to give up work for attacks of acute heart failure. The attacks started suddenly with intense dyspnœa, threatened syncope, and vomiting. The pulse-rate rose to 150–200 per minute, and on many occasions was completely irregular, many of the beats failing to come through to the radial pulse. The nature of the paroxysmal attacks of rapid pulse-rate was never definitely settled, as no electrocardiographic tracing was obtained, but it was presumed that they were paroxysmal attacks of auricular fibrillation because of the gross irregularity of the pulse. While many of these attacks stopped within a short period as suddenly as they started, a number of them went on for some days, and the patient remained in bed and was treated with digitalis.

In November, 1927, she went back to work again, but returned home eight months later in a very exhausted condition, with a history of having had paroxysmal attacks of heart failure, of the type already described, almost every day for a week. She was given digitalis and improved slightly, but after two months' treatment further signs of serious heart failure appeared. On August 10th, 1928, a hard troublesome cough began, and slight œdema of the ankles was first noticed. The œdema spread to the feet, the cough got worse, and by August 29th the œdema was generalised and she had pain in the left side at the back, with impairment of the percussion note over the lung and distant breath sounds. She was admitted to the wards of the Royal Infirmary, and when first seen by me was suffering from marked orthopnœa, and gross œdema was present in the legs and back. Examination of the lungs revealed signs of chronic venous congestion, the liver was just palpable below the costal margin, and the patient had a distinct icteric tint. The face showed none of the blue coloration believed to be so characteristic of congenital heart disease, nor was there any clubbing of the fingers. The urinary output was low, albumin was present, and in spite of digitalis treatment the cardiac condition failed to respond and the patient died on Sept. 29th, 1928, aged 27, in a water-logged condition.

POST-MORTEM NOTES.

The anatomical and pathological observations given below were made by Dr. J. Whittaker, who, at the time of the patient's death, was clinical tutor in the wards of the Royal Infirmary and assistant in the Department of Anatomy at the University of Edinburgh.

The body was that of a fairly well-developed, well-nourished female. There was general anasarca, and the skin was slightly jaundiced. Post-mortem lividity and rigidity were present. The heart was greatly enlarged.

On opening up the auricles posteriorly, the septum between the two was found to be deficient. The only indication of a division into the separate cavities was a strong band of muscle which merged above into the roof of the auricles and below into the floor, being connected in the middle of its extent by a thin muscle strip to the anterior wall of the auricles. Hence two openings were formed anterior to this partial septum; the one above, the other below the thin horizontal band. The upper opening served as a communication between the left pulmonary vein and that portion of the large auricular cavity which represented the right auricle, the two left pulmonary veins having joined together to form a single trunk. The lower opening formed a further communication between the right and left auricles. The right pulmonary veins, two in number, opened separately into the upper part of the right auricle, the anterior and upper vein being large, the posterior and lower very small. The innominate veins also pursued an abnormal course. The left innominate vein, which was of normal diameter, ran down the left side of the œsophagus and, joining with the left superior intercostal vein, opened into the left auricle. The right innominate vein was joined by the azygos vein to form a short superior vena cava. The inferior vena cava, a large trunk, opened into the lower part of the auricular cavity to the left side of the partial septum.

Hence the openings into the cavity which served as a right auricle were the four pulmonary veins and the short superior vena cava; also there was the coronary sinus. Moreover, into that cavity, which was homologous with the left auricle, opened the left innominate vein and the inferior vena cava. There was, therefore, no superior vena cava. The right auriculo-ventricular valve was guarded by three cusps, one posterior and two anterior.

The musculature of the right ventricle was very thick and corresponded in appearance to that of a normal left ventricle. There were three papillary muscles; two anterior, one arising from the anterior wall and one from the inter-ventricular septum; one posterior, from the posterior wall. The chordæ tendineæ from the posterior papillary were inserted into the sides of the posterior cusp and right anterior cusp.

The aorta arose from that ventricle which was situated in the right side of the heart. It arched over the right branch of the pulmonary artery and over the right bronchus, and passed down the right side of the œsophagus. The pulmonary artery came from the left ventricle. The ventricular septum was complete, and the aorta and pulmonary artery were quite separate. The origin and distribution of all branches of the aorta, both thoracic and abdominal, was a mirror image of the normal. This was to be expected, since a complete transposition of the viscera was present. The inferior vena cava and its tributaries presented the same phenomenon, and the lungs were transposed. Thus the left lung had three lobes and the right lung two, and the arrangement of the structures at the hilum from above downwards on each side was correspondingly reversed.

From the pathological point of view there is little to state. There was a slight excess of straw-coloured fluid in the pericardial sac. There were milk spots at the back of both ventricles and one on the tricuspid valve—i.e., the valve guarding the anterior surface of the left ventricle. The right auriculo-ventricular opening was considerably thickened, although there were no vegetations present.

DISCUSSION.

The essential features of this case may be summarised as follows: (1) an absence of the inter-auricular septum; (2) transposition of the great venous and arterial trunks, and a mirror-picture dextra-cardia; and (3) transposition of the thoracic and abdominal viscera.

The absence of cyanosis, in spite of such a marked congenital defect, might appear remarkable, but Maud Abbot states that the absence of the inter-auricular septum does not itself produce cyanosis, unless associated with a maldevelopment of the pulmonary veins. The association is lacking in this case. The fact that a person with such remarkable anatomical anomalies could lead an active life for 27 years warrants the publication of this individual case.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE.

SECTION OF ODONTOLOGY.

AT a meeting of this Section held on Nov. 24th the chair was taken by Mr. C. SCHILLING, the President.

Dr. J. F. VENABLES read a paper on

The Teeth and the Stomach

by Dr. A. F. HURST. The normal man, he said, need swallow nothing that was not suitable in its mechanical and thermal properties for the stomach to deal with. Few people, however, used their masticatory mechanism adequately and the gastric juice had to deal with chemical and thermal irritants, while the churning action tried to make up for lack of chewing, and the hydrochloric acid destroyed infected material from an unhealthy mouth. Thus the delicate and vitally important intestinal mucosa had not to deal with irritants provided there was a healthy stomach. When the stomach was ill-treated by bad use of the first line of defence it was unlikely to suffer unless its owner were one of the 10 per cent. with deficient hydrochloric acid secretion; then chronic gastritis with achlorhydria would result. Thereafter the stomach failed to protect the duodenum, and bacteria flooded it, both from the mouth and from the colon. This infection was the chief, though probably not the only reason of the association of achlorhydria with so many diseases. Thus pyorrhœa and inadequate chewing played an indirect part in a very large number of secondary diseases. The glossitis of Addison's anæmia and subacute combined degeneration of the cord was very rare in the absence of achlorhydria; many patients attributed this sore tongue to their teeth, and dentists might make an early diagnosis.

The 10 per cent. of people with natural hyperchlorhydria were well protected. According to Rosenow a streptococcus could be isolated from the teeth of most people with gastric and duodenal ulcer, but his work had not received much support. Nevertheless dental disease played an undoubted part in ulceration and its treatment was an essential part of the treatment of ulcer. Much could be done by dental hygiene to prevent the swallowing of infected material, and any bad teeth should be removed as soon as occult blood had disappeared from the stools. During convalescence pyorrhœa should be thoroughly treated; the patient should see his dentist every three months. There was much evidence that cancer of the stomach was never a primary disease, so that the treatment of chronic gastritis or ulcer might be a method of preventing malignant disease.

Abdominal operations should be postponed until dental disease had been treated, as they caused a reflex achlorhydria, with the result that swallowed organisms were not destroyed; this might be the cause of post-operative ulcers.

Thus dentists could do much to prevent many kinds of gastro-intestinal disease directly and other forms of disease indirectly.

Mr. G. J. TURNER asked what value was to be placed on the mastication of meat. He thought it was the food that least needed chewing, while stodgy carbohydrates needed most. Was it possible for bacteria to pass through a normal gastric juice? Did not swallowing foul matter from adenoids or pyorrhœa inhibit the secretion of juice? It had been said that recurrence of duodenal ulcer was entirely due to lack of dental treatment after operation. He was glad to hear pyorrhœa regarded so seriously; he thought a mouth should be thoroughly cleaned every month, for decomposition started again within 24 hours of cleansing.

Mr. S. A. RIDDETT asked how frequently the Addisonian anæmia syndrome might be expected to appear in ordinary practice.

Dr. F STOLKIND said that every healthy tooth was worth £200 in American health insurance; the companies saw the connexion between a healthy mouth, a good digestion, and long expectation of life. The Russian peasants knew nothing of cleaning the teeth, but their good mastication kept their teeth in excellent condition. People in civilised life had no time for mastication, and soft food had been substituted for it; the result was indigestion, especially constipation. Careful mastication by good teeth had great therapeutic value in gastro-intestinal disease, but artificial teeth could not replace real teeth. Edentulous patients suffered less from indigestion if they ate without their teeth.

Dr. HUGH STANNUS asked if any work had been done on what proportion of persons masticated properly. Animal tissue was digested best if not masticated, and the vomit of a mixed meal revealed amazing masses of carbohydrate but little animal tissue.

Dr. H. W. KENSHOLE remarked that the gastric acidity decreased between meals, and infected material could pass through more easily at that time. When the acid was secreted into the gastric juice there was a relative alkalinity of the blood. Could achlorhydria be associated with acidosis?

Mr. ALFRED BAYLISS asked whether any definite dental picture and reaction of the saliva were associated with achlorhydria. He had noted a definite rise in alkalinity of the saliva around the period of a meal.

The PRESIDENT recalled the case of a man who had no two teeth meeting in his jaws; he had kept healthy by living on meat, especially steak.

Mr. ARTHUR BULLEID asked if the conservative treatment of pyorrhœa could be supported by the administration of hydrochloric acid to avert extraction.

Mr. E. PUGH asked at what period bad teeth should be removed in ulcer cases, whether the socket should be curetted, and if a vaccine were recommended.

Dr. VENABLES agreed that the mastication of meat was far less important than that of other forms of food. He did not think that a person with a normal secretion was likely to pass bacteria through the stomach, even between meals. That bacteria did not reach the duodenum was proved by the hundreds of sterile duodenal specimens that had been obtained. The Hunterian glossitis was not common, but once seen was very easily recognised. He could not say what proportion of people efficiently masticated their food. People with achlorhydria had no abnormal hydrogen-ion concentration in the blood and there was no definite dental picture that could be associated with their condition, except that a mouth pouring with pus probably indicated achlorhydria. An early case of pyorrhœa might have hyperchlorhydria, and it would not be safe to give hydrochloric acid without a test-meal. Dead teeth in ulcer cases were extracted after all symptoms had disappeared but before the

patient was taken off a diet treatment. Curettage was advised, but vaccines had not proved satisfactory.

Mr. J. LEWIN PAYNE reported a case of

Replantation.

He showed a patient in whom two replanted teeth had remained for nine years. She had had a fibroid epulis and the two central incisors removed at Guy's Hospital, and the teeth had been replaced after curettage of the alveolus and removal of the pulps. They had been held in place by a metal splint for four weeks, after which the teeth had been firm and the gums healthy. Four years later, although she had made no complaint, an X ray had shown some rarefaction at the roots and there had been some pocketing. She had refused extraction at the time but had finally had the teeth removed. Mr. Payne thought that replantation might be justified in young healthy patients with no previous periodontitis.

In reply to questions, he said that there had been no systemic infection during the period so far as he knew, and that he did not think there would have been any hope of getting pulp reunion in this case though it happened in younger cases.

Mr. W. A. BULLEID described a case in which the replanted incisor had been removed for periodontitis and had remained satisfactory for at least 13 years.

Mr. TURNER said that he had known replanted central incisors last 25 years, and that accidental cases certainly had a good chance.

The PRESIDENT spoke of amateur replantations which were often firm enough but caused trouble by bad alignment.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF PATHOLOGY.

A MEETING of this Section was held on Oct. 31st, when Dr. J. LAIT gave a presidential address on some aspects of

Splenomegaly.

In certain cases, he said, a diagnosis could readily be reached by complete blood examination; this group included leukæmia, Addison's anæmia, leukanæmia, von Jaksch's anæmia, erythræmia, acholuric jaundice, and the rare condition of Niemann's disease. In certain reticulo-endothelial diseases the splenomegaly often dominated the clinical picture. Abnormal metabolism or storage of lipoid by the reticulo-endothelial system resulted in the clinical entities of Gaucher's disease and Niemann's disease. Dr. Lait postulated congenital dysfunction of the reticulo-endothelial blood-forming and blood-destroying tissue as the ætiological factors in acholuric jaundice and erythræmia respectively. The parasites of kala-azar were so often found exclusively in the cells of the reticulo-endothelial system, that kala-azar could be called a disease of reticulo-endothelium. Piney's conception of Hodgkin's disease as a reticulo-endotheliosis was an advance. Although the cause still remained obscure, its result was defined. Finally Dr. Lait discussed the evolution of the infection hypothesis of the idiopathic splenomegalies, especially splenic anæmia and Banti's disease, and spoke of Gibson's view that a mycotic organism was responsible for these diseases. He demonstrated specimens of spleen showing Gandy-Gamna nodules in which the organisms have been found, and showed photomicrographs of sections from spleens in which mycelium-like threads were clearly visible. He had also identified Gandy-Gamna nodules in a syphilitic spleen and in a spleen from a case of myelogenous leukæmia.

Dr. T. G. MOORHEAD said he was interested to hear the President's statement that Banti's disease was never hereditary, for the very case on which the President based some of his remarks was that of a boy whose father had suffered from the disease. Dr. Moorhead thought that far too little was known about either the incidence or ætiology of many splenomegalic diseases to justify dogmatic statements. For example, at one time acholuric jaundice was looked upon as purely familial, but later it was recognised that non-familial cases were met with. In the same way Banti's disease was generally regarded as non-familial, but his own experience led him to believe that a familial variety would be recognised before long. As regards blood examinations, he had recently seen in consultation with Dr. William Boxwell a patient suffering from lymphatic leukæmia with some splenic enlargement. An unusual feature of her blood was that the red corpuscles agglutinated almost instantaneously when blood was drawn, so that it was impossible to make films for examination.

Dr. E. T. FREEMAN said he had seen two similar cases—one a case of malignant disease and the other a case of septicæmia in which transfusion was intended but could not be carried out because rapid agglutination prevented a test of the blood.

Dr. R. H. MICKS said that he also had come across two cases in which agglutination had taken place rapidly, one of them a case of pernicious anæmia.

Dr. J. W. BIGGER said he hesitated to label anything as a mycosis. In a recent case he thought he saw a mycelium, but later became convinced that he was looking at the remains of various forms of tissue from which the cells had fallen away and died. Gandy-Gamna organisms were found in a great variety of cases of enlarged spleen, and he could not see how they could possibly be the cause of all the splenic conditions in which they were found. He personally thought that these organisms were only invaders. It was necessary to realise that organisms did invade the body constantly. The blood of the patient mentioned by Dr. Moorhead, whom he had seen with Dr. Boxwell agglutinated at once. He (Dr. Bigger) found that the serum of this patient was capable of agglutinating all types of human blood. As the patient was still alive, agglutination could not be going on in her body, therefore he thought it could only occur in the cold, and he thought this case was parallel to cases of paroxysmal hæmoglobinuria.

Dr. A. R. PARSONS said that Osler looked on splenic anæmia as the first stage of Banti's disease. The speaker was not an advocate of surgery in cases of enlargement of the spleen. He mentioned a case of familial icterus which he had first seen in 1908, and in which he had given medical treatment to the patients, father and son, and they were both quite well still.

Dr. J. T. WIGHAM said it was sometimes stated that patients with Banti's disease usually had quite a small spleen, while patients with splenic anæmia had a large one. He personally thought that this was of no importance, and said that malarial spleens which were big at first got quite small afterwards. He thought the President had not put forward any argument in his paper which would enable one to distinguish between Banti's disease and splenic anæmia.

PUBLIC HEALTH CONGRESS.

THIS congress of municipal associations interested in public health administration, after its formal opening by the Minister of Health on Nov. 17th, was continued throughout the week. We reported in our last issue Sir Arthur Newsholme's address on Medicine and the State. At the morning session on Nov. 20th the chair was taken by Mr. L. G. BROCK, and Dr. THOMAS BEATON opened a discussion on some practical aspects of the

Mental Health Problem.

He sketched the provision made for mental patients in the past and emphasised the lack of any facilities for treatment in the early stages. The work of the psychiatrist, he said, was very much done in the dark, and people did not want to talk of it. He described the three classes of patient—voluntary, non-volitional, and involuntary—and the main principles of the Mental Treatment Act, 1930. The new service, if it was to operate efficiently, must be under experienced guidance, and must be so organised as to give the patient confidence and encouragement. The less the contact with the machinery of officialdom the better. The out-patient clinic should be the first consideration, and should preferably be part of the work of the local general hospital, and under the direction of the medical superintendent of the local mental hospital. Its scope should include mental deficiency, mental and functional nervous disorder, and organic nervous disease. Work of this kind would do more to undermine the old dread of "asylums" than any amount of propaganda, and the clinic should become a centre from which help might be anticipated for any kind of difficulty arising out of maladjustment to life and erratic behaviour. A social service was essential and could be provided by the local Voluntary Association for Mental Welfare, which could serve as a buffer between the patient and his relatives or officialdom. In-patient treatment for voluntary and non-volitional cases could be provided in general hospitals or reception blocks of mental hospitals, but often some new building or modification of existing buildings would be required. More use should be made of convalescent homes. Special mental hospitals and convalescent homes might reasonably be expected to become self-supporting in the course of a few years.

Dr. D. BREWER urged the importance of eliminating the receiving officer, and said that the department of the medical officer of health had now full power to deal with the problem. He believed that ratepayers were more enthusiastic for social measures of this kind than for economy.

Councillor Mrs. SAUNDERS pleaded the case of the mentally affected child in a private school, and Dr. W. A. POTTS urged the importance of the mental breakdown which followed a mild infectious illness after the patient believed that he had recovered. Mr. SCOTT (secretary, Bucks Mental Hospital) asked if the coöperation of the doctors could be assured, and the CHAIRMAN replied that he need have no fear on that score. Dr. H. R. L. ALLOTT suggested that insured persons should all be periodically examined by their doctors and any deficiencies reported to their societies. In this way disasters could be avoided.

Sir HUBERT BOND expressed his agreement with Dr. Beaton, and defended the old Lunacy Acts from the charge of being the sole cause of inadequate treatment in the past. Coöperation with the voluntary hospital was of the first importance, because people would go there. The CHAIRMAN emphasised the importance of social work and referred to its successful organisation in the Hôpital Roussel in France. Miss EVELYN FOX said the workers must be carefully selected and specially trained, so that they could provide the physician with the vital information required for his work. Continuity in the social services was most important; the same worker should deal with a case throughout as far as possible. The success of after-care would be enormously increased if the worker knew the patient in hospital. The work should not be thrust on public health visitors without special training or extra help.

In the afternoon Mrs. HUME PINSENT took the chair and Dr. E. S. LITTELJOHN opened a discussion on the

Social Problem of Mental Deficiency.

He briefly sketched the history of the training and care of defectives and described a modern colony emphasising the happiness and usefulness of a defective under proper care to-day. A certain small percentage were temperamentally unstable or delinquent and should be treated apart, but the majority—85 to 90 per cent.—improved enormously in a suitable environment. During the last nine years inmates had been allowed away from the Manor House colony unattended on 34,000 occasions, yet there had not been a single complaint of behaviour. This showed what supervision and training could do. Mental defectives were a-moral but not immoral; the sexes mixed freely in a colony, but it never occurred to them to be immoral. In a bad environment, however, their suggestibility and facility might cause them to fall. The cost of dealing with the social evils they caused when at liberty was far greater than that of keeping them in colonies. He ran through the features of the Wood report and its recommendations, and then discussed the causation of mental deficiency. Probably about 80 per cent. of it, he said, was due to inheritance but only about 7 per cent. of defectives had a defective parent; it was carried by the apparently normal and related to adverse factors, such as poisons and injury. Further research was urgently needed. Considerable improvement was to be expected from recent Acts of Parliament and much might be done by an enlightened press.

Sir JAMES HINCHCLIFFE said that the expense involved in providing education for all the mentally defective was quite beyond the means of the country at present. His county had tried to get mental deficiency excluded from the Local Government Act 1929, as the treatment was still in its infancy. He advocated sterilisation. Dr. F. D. TURNER expressed agreement with Dr. Litteljohn and sketched the stages in the development of the treatment of mental deficients. At one time we had expected to cure them all; an alarmist stage had followed, coming from America after the publication of family histories, and now we were in a socialisation or resocialisation stage. Mental deficiency institutions in the past had been apt to stagnate; in future they must be more fluid and widely distributed, with their main object the passage of the defective back into the world for the low-grade but essential work of which he was capable. He must leave under licence and must not be discharged. Dr. A. W. SIKES agreed with Dr. Turner and declared that true economy lay in putting a stop to the increase of mental defect. Very little was known about the whole problem at present. Dr. J. A. FAIRER did not think there were so many defectives in the country as was often claimed; to

high a standard might be set. The CHAIRMAN emphasised the gravity of the problem, and said that more defectives might be ascertained if schoolteachers learned more about them.

On Friday morning the chair was taken by Mr. WALTER HEDLEY, K.C., and Dr. C. P. BLACKER opened a discussion on

Sterilisation of the Unfit.

The Eugenics Society, he said, did not hold that sterilisation should be applied indiscriminately or was in any way a panacea which would abolish defect or that could be an alternative to segregation; it was essentially an auxiliary to segregation. They thought it was applicable to certified defectives, recovered insane, and persons suffering from grave inheritable physical defect. The society had proposed that permissive sterilisation should be carried out on those regarded as suitable by responsible authority. The consent of the individual, the guardian, the spouse (if available), and of the Board of Control was to be obtained. The cautious attitude of the Board of Control was a guarantee that no rash action would be taken. As safeguards to the last category, two independent medical practitioners as well as the operating surgeon would have to give additional consent. The Eugenics Society, therefore, made no ill-considered or far-reaching proposals. Everybody agreed on the simple axiom that it was contrary to public policy that defectives should be allowed to breed. Ignorance of the method of inheritance of mental defect was therefore not a relevant objection to legalising sterilisation. The Board of Control had advocated forbidding the marriage of defectives; the chief object of this measure was to prevent breeding. If we knew enough about inheritance to forbid marriage we knew enough to legalise sterilisation. Legal prohibition of marriage would incite a defective to promiscuity far more efficaciously than sterilisation, for it frustrated two instincts: the sexual and the desire for a stabilised home. Sterilisation could only remove a fear of pregnancy, which of necessity had far less deterrent effect on a defective than on a normal person who was fully aware of the consequences of the actions. It was already legal to sterilise for therapeutic reasons, but the law on eugenic sterilisation was ambiguous and obscure. The operation could be done privately on people who could pay, but not officially; this made it subject to abuse.

Dr. W. F. MENZIES said that there were all shades of opinion in the Royal Medico-Psychological Association, as outside it. If the Eugenics Society were on the left wing of the moderates, the Association might be described as on the right wing. A large body of opinion thought that sterilisation might be made a condition of discharge from colonies or institutions. This would result in a small diminution of defect or "neuronic instability"—say 3 or 4 per cent. There was no evidence that the defective was more fertile than the average man, but everyone agreed that in modern civilisation breeding was taking place from below upwards. In the speaker's personal experience, American opinion was that sterilisation would only touch the fringe of the problem. The real trouble was the carrier. Mental deficiency in a few generations always cured itself. He was not opposed to sterilisation, but did not want his audience to think it would do much good.

THE NEED FOR IMPARTIAL INQUIRY.

Dr. A. F. TREDGOLD pointed out that "unfitness" was much more than mental deficiency. A fit person could earn his living without being a burden on the community and could conform to current standards of behaviour. The most important groups of unfitness were those who constantly ailed, chronic paupers and ne'er-do-wells, habitual criminals and, lastly, the insane and mentally defective. A certain proportion of cases of each type were due directly to environmental conditions, but a very large proportion were the result of inheritance; it was very difficult to distinguish them. Therefore it was quite fallacious to regard unfitness as a clinical entity and to legislate for it in the mass. Mental defectives constituted a serious problem, and in 80 per cent. their condition was due to neuropathic inheritance, but the parental neuropathy was not necessarily—or often—mental deficiency. Sterilisation would not greatly reduce the incidence of defect, although unfortunately there was a strong public belief that it would. Defectives in the upper classes very rarely came from defective parents. Nor would it greatly reduce the cost of defectives to the State; they were ipso facto unable to compete with normal people and any contribution they could make to their own upkeep must be made under sheltered conditions. The best place for the bulk of defectives was the colony; their presence in the nation must always be attended with expense, and they cost less in special institutions than loose among the population.

Propagation by the insane was very much greater than by the defective, and a considerable proportion of their progeny did not come up to normal standard. A far stronger case could be made out for the sterilisation of the insane than for that of the defective; nevertheless many cases of insanity were due to an environmental factor and not to abnormal inheritance. The definition of insanity was made more difficult by the new Act. Nobody would regard sterilisation as suitable for the habitual criminal, but there was much to be said for sterilising chronic paupers if it were possible to distinguish the hereditary cases. The physically inefficient group was responsible for quite as much national expense and deterioration as any other, and in it lay the *fons et origo* of mental deficiency. Here again, however, the trouble lay in distinguishing the hereditary case. Sterilisation was applicable only, therefore, to unfit individuals who could earn their living in the community, whose defect could be shown to be germinal, and whose danger to the race lay in their powers of propagation. The presence in the community of girls known to be sterilised would constitute a danger, as the fear of parenthood did act as a deterrent on young men. No procedure should be embarked on hastily before investigation by a competent and impartial tribunal.

Mr. Alderman LOVSEY (Mental Hospitals Association) said that the man in the street felt that he had not the information he would like on the subject, and demanded an impartial and comprehensive inquiry, preferably through the agency of a Royal Commission. He was bewildered by the abundance of evidence for and against.

Father DAVIS, S.J. (Haythrop College), said that the Catholic point of view had not been officially pronounced, but in his opinion the benefits to be derived from sterilisation would not justify it on rational, ethical, or moral grounds. A man had a natural right to his bodily integrity until he forfeited it by crime; no part of a man's body could be cut off by another man or by the State even for the benefit of others. Voluntary sterilisation was also universally condemned because a man had not the right to dispose of parts of his body except to save the whole.

GENERAL DISCUSSION.

Dr. KJÖLSTAD, who was representing the Norwegian Government, said that the subject was one which was of great interest in Norway.

Dr. W. W. HERBERT said that in time he hoped the biologist would be able to distinguish the carrier from the sound person. He considered that persons discharged from asylums should be warned that they ought not to propagate, should be taught contraceptive methods, and offered sterilisation. An official inquiry was only a way of putting off till to-morrow what we ought to do to-day. The financial question had been stressed, but not the great human suffering to children born doomed to suicide or insanity.

Dr. W. A. POTTS was in favour of sterilisation under proper safeguards, but pointed out the danger involved by the fact that it was being advocated by backward local authorities who hoped it would save them their obvious duty of ascertainment and colony provision. A proper inquiry was needed. Even if sterilisation was only applicable to one-half per cent. of cases, it should be used for them, for every great social improvement began from a small beginning.

The children of a defective mother would never be an asset to the community. Incautious sterilisation of psychotic patients might prevent the continuance of a valuable stock, for mental instability was often closely allied to brilliance.

Councillor Miss PATERSON, J.P., agreed with Dr. Blacker, Dr. Tredgold, and Dr. Potts, but suggested that we were losing valuable stock at present as a result of the limitation of families made necessary by expensive social services such as that of mental deficiency. There was only one real fundamental human right and that was the right of every child to be born with a healthy body and a sound mind. She did not want a Royal Commission; she wanted things done, because children were being born with their birthright taken away.

THE CONGRESS DINNER.

On Wednesday, Nov. 19th, Sir Frederick Willis presided over a dinner to members of the Congress and a large assembly of guests, when a very interesting speech was delivered by Sir Herbert Samuel in proposing the toast of the Public Health Services. Sir Herbert reviewed briefly and clearly the responsibilities of the medical officers in the services, demonstrating clearly the debt which is owed to them by the country. The toast was responded to by Sir Arthur Robinson (secretary to the Ministry of Health), Mr. F. H. C. Wiltshire (town clerk of Birmingham), and Mr. E. S. W. Hart (clerk to the Middlesex County Council). The health of the Chairman was proposed in witty terms by Mr. Alderman A. R. Atkey, J.P., late Lord Mayor of Nottingham. The dinner, which might fairly be styled a banquet, was a great success, and a very large company enjoyed some excellent speaking.

REVIEWS AND NOTICES OF BOOKS

Text-book of the Surgical Dyspepsias.

Second edition. By A. J. WALTON, M.S., M.B., B.Sc. Lond., F.R.C.S. Eng., Surgeon to the London Hospital. London: Edward Arnold and Co. 1930. Pp. 720. 42*s*.

WE welcome a new edition of this book. Its merits always lay in the fact that the author's views are based upon a large experience carefully analysed. In this respect its value is further enhanced, since the number of cases reviewed is greater, and, indeed, assumes considerable proportions. The reader cannot but attach importance to opinions founded on such a firm basis, and, moreover, the consideration given to the writings of other workers in this field of surgery and medicine shows that the author's reading is wide.

The new edition is thoroughly up to date, and its scope is extensive. Of cholecysto-gastrostomy, which has been recently revived for the treatment of chronic gastric ulcer, Mr. Walton has had unfavourable experience; his verdict will doubtless lessen the current enthusiasm for an operation which seems to have little to recommend it. For very large and adherent ulcers gastro-jejunostomy with perhaps a later excision of the ulcer is recommended. We could find no discussion on the place that should be accorded to jejunostomy in such cases. The book is full of statements of paramount interest to the surgeon, but where some of these are not supported by statistics they are open to criticism. For example, it is affirmed that invagination of the duodenum will stop hæmorrhage whether it comes from an ulcer on the anterior or pancreatic wall of this viscus. That it is usually essential to perform a gastro-jejunostomy when operating upon a perforated duodenal ulcer will not be accepted by everybody, but we welcome the warning against too early removal of the drainage-tube. A very valuable contribution is that dealing with reconstruction of the common bile-duct.

This book ranks high in surgical literature. The sustained effort, extending over many years, necessary to its compilation, the careful correlation of personal observations with the experiences of others is an achievement which has put every practising surgeon in debt to the author.

A Manual of Diseases of the Nose and Throat.

Seventh edition. By CORNELIUS G. COAKLEY, A.M., M.D., F.A.C.S., Professor of Laryngology and Otology in the College of Physicians and Surgeons, Columbia University. London: J. and A. Churchill. 1930. Pp. 672. 18*s*.

THE purpose of this book is primarily to provide a compact manual on the nose and throat for the needs of students and practitioners. It begins with a short, perhaps too short, chapter on the anatomy of the region, a still shorter one on physiology, and a longer and far more thorough description of methods of examination. The diseases of the nose, naso-pharynx, pharynx, and larynx are discussed as thoroughly as the conciseness of the style allows.

For the treatment of chronic empyema of the maxillary antrum, Prof. Coakley recommends intranasal opening under local anæsthesia with removal of the anterior half of the inferior turbinal, and finds a more radical operation rarely necessary. In the "radical" operation, for which he does not give the indications, he opens the antrum through the canine fossa, and completely removes the mucous membrane

from every nook and corner, stating that any small shred of mucous membrane left will invariably result in failure to secure healing; he makes no opening into the nose, but packs the cavity with iodoform gauze, renewed every four or five days for a month, and obtains complete obliteration in about three to six months; he does not give reasons for advocating this method, which entails prolonged and disagreeable after-treatment and has long been abandoned by most rhinologists. In the treatment of quinsy he advises that the abscess should be opened by means of a stiff bent probe inserted into the supratonsillar fossa, and does not mention the more usual method of opening through the area of bulging in the palate. The operation for removal of tonsils by dissection is well and carefully described, with a clear account of the author's own well-known slip-knot ligature; for the removal of adenoids he prefers the La Force adenotome. In the chapter on the larynx, the well-defined and important condition of multiple papillomata in children receives no mention; though singer's nodules are said to occur nearer to the posterior than to the anterior portion of the vocal cords, the illustration shows the prominences on the vocal processes.

In the section upon malignant disease, intrinsic growths are classified as primary, and those involving the epiglottis and aryepiglottic folds as secondary to extension from the tongue and pharynx, a classification by no means always in accordance with the facts. In a manual of this size the operations for the removal of malignant laryngeal growths are rightly not described, but, in view of the great importance of early recognition by the practitioner, the symptoms and diagnosis of the early stage of the disease might well be more carefully discussed; thus, it is misleading to mention pain as a symptom unless it is emphasised that it only occurs late in the disease. Again, impairment of mobility of the cord is given in more than one place as a diagnostic sign, whereas it is well known nowadays that this sign implies such deep extension of the growth as to render the prospect of successful removal by laryngofissure very uncertain. Attention to the technique of the operation has so improved the results of laryngectomy in recent years that the statement that "few patients survive the operation" is no longer true.

These details, however, little impair the value of the book, which is deservedly popular.

Investigations, mainly on the Physiological Actions of X-radiations.

Conducted for the Cancer Research Committee of the University of Sydney.

Grenz Ray Therapy.

By GUSTAV BUCKY, M.D. New York: The Macmillan Company. 1930. Pp. 170. 15*s*.

THE collection of papers from the Cancer Research Committee of the University of Sydney shows that a healthy state of activity and inquiry is the outcome of the effort made five years ago at the University to stimulate interest in the actions of radiations upon living matter. The papers of most general interest in this collection are those upon the differential action of X rays. This work has been attempted from several sides, Dr. Moppett's observations being the starting-point for investigations of a physical and chemical character into the part played by certain chemical elements in the cells in this differential action. The 17 original papers included in this volume are all genuine attempts at research in a difficult field.

The book by Dr. Gustav Bucky includes contributions by Dr. Otto Glasser and Dr. Olga Becker-Manheimer. In the section written by Dr. Glasser we learn that "Grenz rays are soft Roentgen rays having wave lengths of from 1 to 3 Angstrom units, and are produced in lithium glass X ray tubes with voltages from 4 to 10 kilovolts." These rays are very easily absorbed by all forms of matter; they have been given the name Grenz by Dr. Bucky because he believes them to form a sort of boundary between ordinary X rays on the one hand, and ultra-violet rays on the other. We do not much care for the name. The terms soft X rays or long wave-length X rays have the advantage that they describe some characteristic of the rays, while the term Grenz indicates a boundary that does not exist. These rays have been used by Dr. Bucky and others in the treatment of a number of diseases, not only diseases of the skin. We gather that the development of this form of therapy has been somewhat chequered, for on page 109 the author says: "But even if a method involves risks, a patient may be willing to take a chance at times if he may thus be rid of a protracted, troublesome disease." He continues: "Thus, it is not logical to dump the child out with the bath and arbitrarily to issue the fiat that a therapeutic method must be abandoned because of certain possible aftermaths." The meaning of this is baffling.

Romance of the British Voluntary Hospital Movement.

By A. DELBERT EVANS and L. G. REDMOND HOWARD. London: Hutchinson and Co. 1930. Pp. 360. 18*s*.

THE "Voluntary Hospital Movement" is a very modern phrase, but the authors of this stout volume, to which Sir W. Arbuthnot Lane contributes an introduction, carry it back to the monasteries regarded as hospitals for the sick, and to the refounding, after the Dissolution, of St. Bartholomew's as solely a curative institution. This is a large field to cover, and, on the whole, the authors cover it adequately. They are naturally much indebted to the late Sir Henry Burdett's monumental "History of Hospitals"; a book of this kind intended for more or less popular use must necessarily be, in the main, a compilation. It will tell the specialist little with which he is not already acquainted, but it should be useful as a compendious book of reference.

There was room for a book which should bring together the facts and arguments relating to the progress of the hospital movement in the modern sphere, and especially since the Great War, and much space is devoted to this side of the subject. Thus we have a sketch of the rise of the specialist hospitals, of the work of the teaching hospitals, the creation of scientific nursing, the place of the poor-law institutions, and a discussion of the technical problems affronting the voluntary hospitals, together with an account of such new methods of support as the Hospital Saving Association and the various developments of contributory schemes. The facts and figures thus brought together afford an impressive view of many sides of a great subject, that which relates to very recent legislation not being ignored. What may be called the modern history side of the subject is, indeed, the most useful part of the

volume, which contains a very large number of small illustrations.

The index is full, but by no means complete. We notice certain slips. "Angelnoth," an Archbishop of Canterbury who is supposed to have been flourishing in 1201, is a prelate unknown to history, and the house of the Society of Apothecaries is not in Pilgrim-street. The statement that "the first cottage hospital" was founded at Cranleigh, in Surrey, in 1859 by Mr. Albert Napper, F.R.C.S., is inaccurate. The Warwick Dispensary and Cottage Hospital was founded in 1823; Frodingham Cottage Hospital, in Lincolnshire, goes back to 1844; that at Ripon to 1850, and that at North Ormesby to 1857. The name of the Founder of THE LANCET is mis-spelt more than once.

Modern Skin Therapy.

By H. D. HALDIN-DAVIS, M.D., M.R.C.P., F.R.C.S., Dermatologist, Royal Free Hospital; Lecturer on Skin Diseases, London School of Medicine for Women. London: Jonathan Cape, Ltd. 1930. Pp. 128. 5*s*.

THERE is much to commend in this handy little manual. A lucid and fluent style and an engaging, if slightly cynical, outlook enliven its pages, and hold the reader's attention closely through all the ten chapters. The selection of subjects has been made with a view to meeting all the simpler requirements of the general practitioner. With those requirements in mind it is unexpected to find a long chapter on lupus, which, as the author himself admits, "is in most cases beyond the resources of any single medical man" (p. 59). The treatments of furunculosis intertrigo, carbuncle, scabies, pediculosis, and that ever-present and much maltreated disease—impetigo—are not entered upon, although they may tax the average therapeutic resources, and require expert advice. All that is worthy of consideration in the genesis and treatment of eczema has been described in plain language, and there is a refreshing absence of complicated formulæ. The author's exceptional experience in the application of X rays in the treatment of tinea tonsurans qualifies him to speak on this subject with particular force, and makes his carefully detailed descriptions of the technique he employs of great value. His last chapter on minor surgery includes an account of carbon dioxide freezing and its indications, electrolysis, and the technique for the injection of varicose veins. It is satisfactory to note that in common with nearly all other authorities, Dr. Haldin-Davis unhesitatingly condemns the X ray treatment of hypertrichosis, and reduces the field and indications for ultra-violet therapy to one of honest if diminished proportions.

Bacterial Metabolism.

By MARJORY STEPHENSON, M.A., Associate of Newnham College, Cambridge; Member of the Scientific Staff of the Medical Research Council. London: Longmans, Green and Co., Ltd. 1930. Pp. 320. 18*s*.

AN outline of the essentials of bacterial metabolism has been lacking in British bacteriological literature, and this volume supplies one. The general arrangement is good. The various chapters deal with fermentation, respiration, growth and nutrition, carbohydrate and protein breakdown, and nitrogen fixation, while there is an extensive bibliography at the end of the book. There is, however, great variation in the lucidity with which different subject are dealt. Many are excellent but a few, like th sections on oxidation, oxidation-reduction potentials and anaerobiosis—these dealing particularly with th work of Miss Stephenson's own school—are discussed in a confused manner. This is mainly due to undu prominence given to isolated and often unconfirme data. Happily the author, usually at the end emerges from the haze with clearer conception, as for example, in her concluding sentence on th respiration of anaerobes, "notwithstanding muc work, however, the main problem of how stric anaerobes live remains unsolved." There are severa omissions, particularly of work done by Britis bacteriologists on anaerobes and hæmophilic bacteria This is doubtless due to the fact that the source o much of the author's information does not refer t British work. We could find no reference to th nature of toxins or their production. Apart fro these defects, Miss Stephenson has succeeded i preparing from a heterogeneous accumulation o bacteriological data a volume which is a usefu summary of the present-day knowledge of bacteria metabolism.

Del Ringiovanire Diatermico.

By Dr. GAETANO ZUCCHI. Milano (132)—Viale Romagna N. 58. Soc. An. Istituto Editoriale Scientifico. Pp. 240.

THE author of this monograph holds the opinion that the changes accompanying old age in men are caused by deficiency in the internal secretions of the testicles, and maintains that these changes can be prevented by applying diathermy to these glands. Believing, as he does, that there is no real kinship between man and the anthropoid apes, Dr. Zucchi believes that Voronoff's transplantation is unscientific. He also criticises Doppler's operation (sympathicolysis of the spermatic artery) as dangerous. He describes some work which he has conducted on the application of diathermy to bull's testicles for the purpose of ascertaining the conductivity of gland tissue of this kind and of devising a suitable technique. In the human testicle he has observed that the senile gland offers a lower resistance to electricity, and that diathermy increases it. He thinks that this increase may serve as a prognostic index of clinical improvement. The benefits which are claimed for testicular diathermy are great. They are said to appear, in some cases, after the first treatment, and in all cases after six to eight applications. The asthenic, the nervous, the irascible and the depressed are said to show best the effects of the treatment. Greater elasticity is said to be observed in the arteries. The author states that testicular diathermy has been successfully combined with hepatic diathermy in enlargement of the liver in immoderate drinkers and that good results follow the former treatment during convalescence after influenza. In aged diabetics the glycosuria is said sometimes to disappear.

Apart from its use in cases of infection of the contents of the scrotum, diathermy has not been systematically applied in this country to the testicles of those who are the subjects of disease—not, at any rate, when the glands are clinically normal. Until the results obtained by Dr. Zucchi have been confirmed by other workers it is likely that English workers will remain sceptical. The electrodes used, which are protected by patents, are described and illustrated. Their cost is stated, and those who subscribe to the monthly journal *Le Indicazioni della Diatermia* can have them at a reduced price.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 29, 1930.

THE NEXT STEP IN MENTAL TREATMENT.

ON Jan. 1st the Mental Treatment Act will come into operation, and with it the facilities for the early treatment of mental disorders which have long been demanded by the medical profession. It is true that Parliament has hedged these facilities with safeguards which have been embodied in the rules framed by the Board of Control. Some of the safeguards will prove vexatious; they are however consequences of the Act and cannot be helped, and if the practitioner is inclined to resent them he must remember they are the price paid for getting the Act on the Statute Book. It is futile now to grieve over the prejudices which caused these limitations, the more so as the Act is a great forward step; for it will benefit persons threatened with mental illness and at the same time make it easier for the practitioner to give advice when called in. Three features of the Act are especially important to medical practitioners: (1) the extension of voluntary means of treatment; (2) the provision of temporary treatment in early cases; (3) the additional protection given to the practitioner himself.

For the first time in this country public mental hospitals will be able to admit persons who apply for treatment at their own request. In most of the institutions receiving private patients able to pay for treatment a larger number are admitted voluntarily than under certificates; this discrimination between rich and poor will now cease. It is unfortunately true that most existing public mental hospitals are already over full, and until more accommodation is provided complete advantage cannot be taken of the Act. Nevertheless, if even a few patients are so received, the fact will have a good effect; it will tend to remove the feeling of detention, and give to the patients generally a better realisation that the hospital is a part of the health service of the community. A stream of voluntary patients will do much to lessen the prejudices that now exist. But the Act goes much further than this: voluntary patients subject to certain regulations can be received in general or special hospitals and nursing homes previously approved by the Board of Control. It may be thought at first sight that there is nothing new in this, that voluntary patients have always been allowed to go where they like, and that the approval by the Board is unnecessary. It should however be recalled that Section 315 of the Lunacy Act, 1890, is not repealed, and that anyone receiving persons of unsound mind for profit is liable to prosecution unless the patient is certified as such. All those who have had the care of persons with threatened mental disease know it is impossible to be sure that patients will not lose self-control or become irresponsible, and the natural and proper desire to do the best for them may frequently mean infringement of this section. In cases such as this the patient may be willing to sign a paper saying he is remaining voluntarily. It is not expressly stated in the new Act that the holders of voluntary patients are exempt from the provisions of Section 315, but the fact of the case having been notified and that the home or house has been approved makes the position sufficiently secure. The requirement that nursing homes receiving voluntary patients should be approved by the Board will have a salutary effect; many existing places of this kind are inadequately staffed and possess few resources for dealing with these difficult cases. There remains one difficulty under the new Act which cannot be ignored: patients and their relatives may object to signing any paper or formally making application for treatment on a voluntary basis. In practice, however, it is rare for the patients fit to be received in this capacity to object when the position is candidly explained. It must not be forgotten that by voluntary patients are meant persons who understand their position and who wish to be treated. Although many of those who will be dealt with under this section are recent early cases, it is not intended to limit voluntary patients in this way. On the contrary, many of them will be persons long subject to milder forms of mental disorder, or liable to relapses, but who possess insight and realise their need of care and treatment.

The section of the Act dealing with temporary patients introduces an entirely new principle in English legal practice and promises to be of great benefit to large numbers of persons. In future it will be possible to obtain treatment for all suffering from recent and even severe mental disorder without formal certification and without any application to a magistrate, provided the patient does not object. He may be utterly confused or delirious, but if for the time being he is "incapable of expressing himself as willing or unwilling to receive treatment" he may be received as a temporary patient in a public mental hospital, a registered hospital, or in any other institution or home approved by the Board of Control for the purpose or into single care with the consent of the Board. The patient may remain under treatment for six months, which may under certain circumstances be extended for another six months. The Act prescribes conditions under which temporary patients can be received, and it is important that practitioners generally should be familiar with them. An application must be made by a relative or other authorised person. The application must be accompanied by two "recommendations" signed by medical practitioners, one of whom should if possible be the usual medical attendant, and the other must be a medical man approved by the Board of Control. In this instance (con-

trary to the procedure under the Lunacy Act) the medical men may act in consultation. These recommendations must state that the patient is suffering from mental illness and is likely to benefit by temporary treatment, and that it is expedient with a view to recovery he should be received for treatment. The prescribed forms for the application and recommendation will be obtainable from law stationers, and it is desirable for medical practitioners to procure these in advance. Hospitals and homes, other than public and registered mental hospitals, receiving voluntary and temporary patients, have to be approved by the Board. There is every reason to believe that a large proportion of recent cases may never be certified and many will recover without having been termed insane. But this happy event will depend a great deal on whether an approved home can be found which is not too costly, and in default of this whether the local authority has accepted its obligations under the Act and made provision for these cases. It is to be feared that in many localities for some time to come this will be inadequate, although the Board have already had several conferences with local authorities and hospital committees urging the necessity for action in this direction. In deciding the principles on which medical practitioners should be approved for the purpose of making recommendations under the Act, the Board have had the assistance of a committee whose chairman is the President of the Royal College of Physicians, and we have recently published a letter from the chairman of the Board pointing out the importance of obtaining a large enough panel of approved medical men to cover the whole country.

There remains the all-important question of the protection given to the practitioner who makes the recommendations. Whilst it is impossible to foresee the ingenuity of lawyers in bringing action against medical men, nor the extent to which members of the medical profession can be persuaded to give evidence against their colleagues, there is good reason to believe that the sixteenth section of the Act will afford a real protection against legal proceedings being brought against practitioners who sign recommendations under this Act or certificates under the Lunacy Acts. This clause came into force with the passing of the Act, and in future the onus of proving want of reasonable care and good faith rests on the plaintiff, and no proceedings can be brought without the leave of the High Court. The effect of this clause should restore to the medical profession that sense of security which will ensure its coöperation in working an Act which is a great step forward in medical practice, for when it is working fully large numbers of persons suffering from mental illness will be treated to recovery without any certificate that they are of unsound mind. The duty of making provision for the treatment of temporary patients will be thrown upon the local authorities. The Act will in fine make it easier to secure early treatment and at the same time will do much to make this treatment adequate.

THE GROUPING OF FILTRABLE VIRUSES.

IT was near the end of the nineteenth century that LOEFFLER and FROSCH set on firm ground the evidence of ultramicroscopic and filtrable parasitic viruses which were pathogenic for animals. The filtrable virus of tobacco mosaic was described in Russian literature by IWANOWSKI in 1892 and was rediscovered by BEIJERINCK in 1898. To these two virus diseases were added in the next 20 years a number connected with plant pathology and some 40 infections of animals. Although outstanding examples of this category were carefully studied between 1898 and 1920, much greater attention has been given to viruses during the last ten years. Fresh members are being constantly added to the group. Some of these—e.g., ectromelia, the gangrenous disease of mice, and psittacosis—have arrived too recently to be included in the seventh volume of the System of Bacteriology[1] published by the Medical Research Council, which deals with some 48 diseases of mammals and birds, of which 21 do not occur in man. The exact number at present known is uncertain, since some are not completely differentiated—e.g., the pock diseases of animals; moreover, the propriety of including certain others—e.g., pleuro-pneumonia of cattle and typhus fever—in the virus category is open to question. An attempted definition and general survey of the whole group is presented by Prof. J. C. G. LEDINGHAM and Dr. W. E. GYE in a valuable introductory chapter in which many of the characteristic features of viruses are discussed, including the types of immunity reaction and the epidemiology.

It must be acknowledged that the members of the group are heterogeneous and held together largely by negative characters which are not universally applicable. Invisibility cannot be accurately attributed to the microbe of pleuro-pneumonia of cattle or the rickettsia of typhus and the elementary bodies of Paschen in vaccinia; while those of Borrel in fowl-pox have considerable claims to be considered as visible particles of the virus. Filtrability of virus, though in some instances of a high order, is now regarded as variable in degree in many instances and is not always a measure of the size of the particles of virus, although filtration through collodion membranes has been made much more exact by the work of BECHHOLD, BARNARD, and ELFORD. The third chief criterion of a virus—i.e., inability to multiply in artificial culture media—does not apply to the agent of pleuro-pneumonia, and the propagation in cultures of tissues which do not themselves show active growth, as in the Maitlands' cultures of vaccinia, indicate that the line of demarcation between growth in dead and living media may not be very sharp. In some diseases provisionally included in the group by analogy a communicable virus has not yet been generally accepted as proven. Amongst these are encephalitis lethargica and the encephalitis following

[1] A System of Bacteriology in Relation to Medicine. Vol. VII. Medical Research Council. London: H.M. Stationery Office. 1930. Pp. 509. £1 1s.

vaccinia and measles. The collection of the whole together in one volume is, however, justified by convenience and usage. The well-known cell inclusions characteristic of some virus diseases—e.g., rabies, variola—are well dealt with and discussed critically in a separate chapter by Dr. R. J. LUDFORD. The volume contains chapters by 28 different authors, most of whom have made experimental study of the subjects of their contributions. Those diseases on which much recent work has been done, such as dog distemper, yellow fever, foot-and-mouth disease, typhus, and vaccinia are given most space. The diseases of lower animals are amongst those which have yielded the chief additions to knowledge of general importance. Even such an item as virus III. of rabbits, with apparently remote relation to human medicine, is shown to take its part in elucidating immunology, cell-inclusions, and methods of culture. The immunity phenomena in virus diseases are treated in the special chapters as well as in the introduction, and the results obtained suggest less difference from those known in diseases due to bacteria than at one time seemed probable. Antibodies which neutralise the virus have been obtained in vaccinia, herpes, foot-and-mouth disease, cattle plague, fowl-pest, swine fever, Borna's disease of horses, poliomyelitis, and in other instances. Formolised or carbolised virus, which is not infective, has been proved to give specific protection in varying degrees, when used as a vaccine, in rabies, foot-and-mouth disease, distemper, fowl-pest and yellow fever.

That the so-called virus diseases present points of contact with many diverse pathological conditions needs no proof. The properties of the infective extracts of the Rous sarcomata are shown by Dr. GYE to resemble closely other viruses, and the resemblance of these tumours to mammalian new growths is well known, though not insisted on in the chapter here cited. The much-contested relations between the strains of *B. proteus* X and the virus in the typhus group of diseases is fairly discussed by Dr. A. FELIX, especially with reference to the new facts in regard to the forms of tropical typhus and sporadic typhus in the United States, though the author's own views are not concealed. The volume closes with a chapter of 44 pages by Dr. F. M. BURNET on the bacteriophage and allied phenomena. He describes and discusses the fascinating and complex results of experiments, but leaves unsettled the question of the parasitic nature of the phage, though admitting that the objections to D'HERELLE'S well-known view of it as a living independent agent are based on general and theoretical considerations rather than on directly opposing facts. Dr. BURNET considers that the therapeutic value of phage is not established except in fowl typhoid but that suggestive results have been obtained in some other diseases. The results claimed by D'HERELLE in cholera are very good but are not unchallenged. A chapter which will be very welcome to animal pathologists is that in which Dr. J. HENDERSON SMITH briefly and clearly describes the position as regards virus diseases of plants. Dr. R. ST. JOHN-BROOKS gives a short account of diseases of insects which are due to viruses. This volume of a great work well fulfils its purpose, providing a critical statement of present knowledge without undue emphasis on the past stages through which progress has passed.

CHANGING SURGERY.

FROM time to time some of the greatest surgeons have expressed a belief that surgery had reached the limits of efficiency as a method of treating disease; and yet as the years pass we cannot be blind to the fact that surgical craft and surgical science have made great strides. The delicacy of technique of the average abdominal surgeon is immeasurably superior to that of his predecessor of 25 years ago. He has recognised that it is vital to conserve every possible drop of blood, to prevent undue exposure of the viscera, to diminish the afferent nocuous nerve stimuli, to avoid the sacrifice of efficiency to speed without prolonging the operation a moment beyond what is absolutely necessary; and the recognition has made it feasible to resect large parts of the stomach and colon almost with impunity even in the aged. This being so, the fact that we have no knowledge of the future, no vision of the direction in which craftsmanship may advance, does not justify us in predicting that no change for the better can or will take place. Unforeseen technical advances in collateral sciences can often be adapted for use in surgery. A rapidly alternating diathermy current has rendered possible the ablation of certain brain tumours which a few years back were considered inoperable, as their removal was liable to be accompanied by uncontrollable hæmorrhage. The diathermy cautery has made vastly more simple and safe the extirpation of tumours in the tonsillar region. We need not suppose that the technical side of surgery has reached finality.

Nevertheless Mr. C. H. FAGGE has done well to call attention in a presidential address[1] to one important factor in limiting the field of surgery—namely, the small power of repair of specialised tissue. So long as the repair of a wound is due to proliferation of fibrous tissue an impassable barrier of scar tissue will result; thus the best we can do to cure a hernia is to leave a scar where actually contractile muscle should be, and, because of the small power of regeneration of organs and tissues, surgery largely consists in the ablation of diseased parts of the body. Surgery is, in fact, a mutilating method of treatment, for from its very nature surgery is often called upon only when treatment short of removal of the offending part has failed. Medicine is ever searching to anticipate and render unnecessary the use of the knife; every thoughtful surgeon is aware that his science is an ephemeral thing, bound to give way to less violent measures with the advance of knowledge. It is a welcome portent that such realisation is becoming more general on all sides; yet the natural limitations of surgery are not perhaps so strict as Mr. FAGGE would have us believe.

[1] THE LANCET, Nov. 15th, p. 1072.

Elastic fibres will penetrate a scar, epithelium regenerates, many large gastric ulcers heal with so much reconstitution of the stomach wall that their former situation becomes almost impossible to perceive post mortem. In other mammals large portions of muscular tissue have been removed and the muscles have regained their normal size. Motor nerves which have been divided and implanted into muscle have been observed to form new end-plates. The parietal loculi of the common bile-duct have hypertrophied after cholecystectomy to the extent of giving the animal a new gall-bladder as far as function goes. It cannot be denied that regeneration will take place in the kidneys. May we not still hope that, as the result of some new discovery, the fibrous barrier we now obtain in the most aseptic wound will be reduced to a vanishing-point, and ultimately cease to be a barrier at all?

Meanwhile it is all to the good that the limitations of surgery in its present stage of development should be fully realised. The prevalent tendency to restrict the extent of surgical intervention is also good, for the safety and ease with which the surgeon has learnt to remove organs or large portions of them has sometimes led to too radical an outlook. New conceptions arising from more intimate knowledge of disease have restricted the operations of surgery in many septic affections such as acute osteomyelitis, cellulitis, carbuncle. We are entering, in Lord MOYNIHAN'S words, the era of physiological repair by the craft of surgery. Diligent search is being made to substitute some method less radical than cholecystectomy or partial gastrectomy for cholecystitis or gastric ulcer. It is in such studies that surgery advances and technique becomes finer, so that it may be used to greater advantage on the fewer occasions when intervention is necessary—witness especially the progress in thoracic and cranial surgery. In the future no doubt the number of operations will lessen, while the field of surgery will enlarge so as to include what are now regarded as medical diseases. It may be that the present-day distinction between physician and surgeon will disappear, and one individual will combine the knowledge and technical skill of both, to the great benefit of the healing art. In neurology this has already happened. In the case of the organs of special sense it has always existed.

ANNOTATIONS

THE EASTMAN DENTAL CLINIC.

THE opening of the Eastman Dental Clinic on Wednesday of last week is an important event in the record of the efforts made to provide for the dental needs of the children of London. For a long time the only institutions available for the care of children's teeth other than extractions were the dental hospitals, and if time and distance had not limited the attendance they would have been overcrowded. The institution of a large number of clinics in London and its suburbs by the London County Council has made conservative dentistry accessible to large numbers of children, but as the scheme is far from being comprehensive or complete, the important work of treatment of defective growth of the jaws and abnormalities in position of the teeth is scarcely attempted, and these conditions, together with the treatment of diseases of the gums and some surgical affections of the jaws, form a very valuable part of the work of the special dental hospital. Mr. Eastman's object is to demonstrate, in a particular area, the beneficial effects on health of thorough and complete preventive and remedial treatment of the mouth and teeth from the earliest years. For this purpose the sumptuous building and equipment generously provided by Mr. Eastman are more than adequate, and the maintenance has been guaranteed by Lord Riddell and Sir Albert Levy, the chairman and honorary treasurer of the Royal Free Hospital, which the new building adjoins, and with which it is closely associated as regards management and contact. The orthodontic department is to be a special feature, and will go far to meet a growing demand for the treatment of the various forms of abnormal jaw development, which are more intimately connected with general health than is sometimes appreciated. Further possible developments of the clinic leap to the mind. Its association with the Royal Free Hospital suggests a school for the training of women dentists, but for that purpose certainly a child clientèle only would not be adequate. For the training of dental nurses for employment in school clinics throughout the country the institution offers good facilities and the employment of such assistants to school dentists, with strict limitation of function, might well be more extensive than it is; but until the demand develops it would obviously be unwise to train more than can be easily absorbed. Another possibility is research, for which there will clearly be ample accommodation and equipment, and probably clinical material which it would be a pity to waste.

RESEARCH ON THE COMMON COLD.

EARLY in 1928 the John J. Abel fund of $195,000 was established in the medical school of Johns Hopkins University for research into the cause of the common cold. The first definite results from this research are reported in the current proceedings of the Society for Experimental Biology and Medicine.[1] Healthy young women volunteers were secured for the experiment. They were isolated with great care from all chance infection. The experiments, moreover, were carried out in the months of June and July, 1930, when the incidence of colds in Baltimore was at a low level. Nasopharyngeal washings were taken from persons who were in the first 48 hours of a common cold infection. Half of each washing was put through a Berkefeld V candle and in each case the filtrate contained filter-passing anaerobes. The other half was filtered either through a Berkefeld W candle or an improved Seitz filter, when all attempts to demonstrate micro-organisms, either aerobic or anaerobic, in these filtrates failed. The experimental subjects were inoculated intranasally and the pharynx swabbed with small quantities of the same filtrate. In the first group of ten volunteers half received Berkefeld V filtrate and half Seitz filtrate. Two subjects in

[1] Long, Perrin H., and Doull, James A.: Etiology of Acute Upper Respiratory Infection (Common Cold).

each group developed colds. From one of the latter serial passages were made through Seitz filtrates to two other volunteers. In another experiment three successful transmissions were made in series through Seitz filtrates and a fourth passage was made through a Berkefeld W filtrate. These observations confirm and extend previous work, tending to prove that the infection of the common cold is due to a filter-passing virus incapable of growing on any known culture material.

THE CAUSES OF HOOKWORM ANÆMIA.

AN adequate answer to the question of what causes hookworm anæmia has been brought nearer through independent investigations by A. J. Huart of Leiden,[1] and by F. Fülleborn and W. Kikuth of Hamburg.[2] Huart infected dogs with very many larvæ of *Ancylostoma caninum* and *A. braziliense*. Blood appeared in the fæces on the ninth day, sometimes amounting to a bloody diarrhœa; while after death the intestinal contents varied from a blood-stained mucus to large amounts of clotted blood with the underlying mucosa sown with bites. Whether blood was found in the hookworms themselves depended on the interval between the death of the host and the examination. If the latter was delayed the worms were free from blood; if it was made immediately after death the great majority of them contained it. Now G. H. Whipple showed over 20 years ago that a blood-filled hookworm placed in water could be watched rapidly expelling blood, so that whether in Huart's dogs the intestinal blood had mainly been swallowed and promptly wasted by the worms, or had mainly come from their abandoned and oozing bites, is immaterial for the present purpose. In these grave hookworm anæmias, produced by as many as 3000 worms in young dogs of 3 kg., there was severe bleeding into the intestinal lumen. How severe such bleeding may be is shown in the case of one of the Hamburg dogs which died of an acute hookworm anæmia due to *A. caninum*. Its bowels had not been opened for three days. The iron found in its intestinal contents corresponded to 455 g. of the impoverished blood then in its vessels, or to one-eleventh of its body-weight. This presumably represents the drain produced by 1100 worms in three days. There is, then, no question that in these acute hookworm anæmias bleeding occurs into the intestine in great quantity. To conclude that it does not occur in chronic cases is unwarranted. It is noteworthy that viewed as food for the worms the whole of this intestinal hæmoglobin was sheer waste. Clayton Lane has, however, found iron in the intestinal wall and body wall of the hookworms of man, so that, in addition to wasting hæmoglobin, they use it. Indeed, the food required by rapidly growing worms and by adult females laying 6000 to 10,000 eggs daily must be considerable, and it may confidently be concluded that hæmoglobin forms part of it. Blood is used as well as extravagantly wasted by the worms.

The Hamburg work, moreover, showed abundance of pigment in spleen and bone-marrow, the liver being unmentioned in this respect; and although in this instance no iron could be found in the liver, the pigment found in spleen and marrow must have been derived from hæmoglobin just as malaria pigment is so derived. In malaria, another great cause of anæmia, there is destruction of red corpuscles in the circulation. Do hookworms produce a toxin which destroys red corpuscles in the circulation? That hookworms do in fact produce toxins is shown partly by the eosinophilia which normally accompanies their presence, and partly by the intense degeneration with casting of the epithelium found by Hoeppli of Hamburg in the convoluted tubes of the kidney of dogs in acute hookworm infection. As to what particular toxins the worm produces, evidence steadily accumulates that anticoagulins are present in its anterior part—namely, that part containing the large glands which open in or close to the mouth. This strongly supports the view that blood is the essential food of hookworms, that they function as miniature leeches. But for the presence in them of a hæmolytic substance evidence is conflicting, and after their fresh experiments Fülleborn and Kikuth leave the matter open. But, as Huart notes, hæmolytic substances can be demonstrated in alcoholic and ethereal extracts of all normal organs. Furthermore, the Hamburg investigators fed mice with dozens of hookworms each, or injected them with their fresh or dried extracts to an extent which represented as many as 300 worms apiece, without producing the least anæmia. Acute hookworm anæmia is, then, essentially due to the grave intestinal hæmorrhage which accompanies it, yet in view of the damage produced in the kidney, it is rash to brush aside toxic action as a contributory cause.

As regards the more usual chronic anæmia, it is equally unreasonable to brush aside bleeding as a negligible factor in its causation. On the other hand, the toxic changes in the kidneys in acute canine cases are strongly reminiscent of those noted for man by B. K. Ashford and his colleagues in their report on the Porto Rico Anæmia Commission for 1905–06. Fresh evidence for the effects of this toxic renal damage seems to be offered by the observation of A. W. and J. N. Taves, quoted by A. A. Osman,[3] on the value of alkaline therapy in reducing the time needed to remove the gross lymph effusions of grave hookworm disease, so allowing this condition to be viewed alongside ordinary chronic parenchymatous nephritis. There is, then, abundant evidence of toxic damage in both acute and chronic hookworm infection, and its consequences should attract investigation; but there is no evidence that it is the important factor in causing hookworm anæmia, and in some circumstances there is clear evidence that it is not.

[1] Acta Leidensia, 1929, iv., 48.
[2] Archiv f. Schiffs- u. Trop.-Hyg., 1929, xxiii., 171.

GEOGRAPHICAL INCIDENCE OF DIABETES.

Dr. C. A. Mills of Cincinnati has made a survey[4] of the incidence of diabetes mellitus in various countries. He finds it uncommon among the Chinese, in whom it is mild and accompanied by supersensitiveness to insulin. It is mild also, he says, in Japan and in India except among the wealthy leisured classes. It has been observed that the incidence is greater among Chinese who forsake their native diet for European foods, and among Irish inhabitants of Boston, emigrants from a country where the incidence is low. Dr. Mills thinks the incidence is largely affected by climatic conditions, and has collected figures which show that in the U.S.A. the diabetic death-rate is lowest in the southern States, while the western plateau and mountain States come next, followed by the northern States from Michigan west, the middle States from the Atlantic to the Pacific coasts, and finally the north-eastern States, with a rate 2·2 times as high as that of the southern group. That this cannot be explained on racial grounds has been shown by Lehman, who found that diabetes was as prevalent among negroes in the south

[3] THE LANCET, Nov. 1st, p. 945.
[4] Arch. Internal Med., Oct., 1930, p. 569.

as among white people. The further members of the negro race are taken from their natural tropical environment the higher becomes the death-rate from diabetes. In Canada the incidence seems to be considerably lower than in the United States, but there is the same variation in the diabetic death-rate from east to west as in the northern States. In Europe the distribution of the death-rate is peculiar; all the countries above the fiftieth parallel, with the exception of Ireland, have a diabetic death-rate above 9·6, while all below that parallel have a lower rate. Moreover, the rate is said to be increasing much more rapidly in the northern European countries than the southern. In Asia the rates were found to be considerably lower, where they could be obtained, being 3·19 in Japan, 2·7 in the Straits Settlement, and 6·5 in Ceylon; in South America the rate is everywhere low. In summarising his observations, Dr. Mills points out that the death-rate from diabetes seems to increase with the distance from the equator; the apparent exceptions of Japan and northern China he finds explicable on the grounds of their long tropical summers. He thinks it undoubtedly true that some races, notably the Chinese, are more prone to the disease if they forsake their native food for a foreign diet containing more sugar; but he considers the racial factor as a cause of varying incidence may be discarded, on the grounds of the difference in the diabetic death-rate between negroes in the northern and southern States, and between Irish in Boston and Ireland. In a further paper dealing with the relation of sugar consumption to the ætiology of diabetes mellitus, Dr. Mills recorded that he was unable to find any constant connexion between the two.

DENTAL CARIES AND DIET.

THE Committee for the Investigation of Dental Disease reports[1] an investigation by Mr. A. Deverall and Miss M. Reynolds into the influence of dietetic measures on the incidence and progress of caries in children's teeth. The investigation, which is under the supervision of Mrs. M. Mellanby and Dr. H. C. T. Langdon, has been in progress for nearly three years, and it is now possible to give some indication of the results which are being obtained. The total number of children under observation is approximately 860, housed in three similar institutions outside Birmingham. These were formerly under the poor-law authority, but are now under the local education authority. The ages of the children vary from 2 to 16 years. The basal diet is, on the whole, similar in all three institutions, and is one that would be generally regarded as thoroughly adequate. There is no significant difference in the character of the districts from which each institution draws its supply of children. The children have been grouped as follows for purposes of supplementary diet:—

(*a*) No addition to basal diet	20	children.
(*b*) Vitamins A and D (cod-liver oil and Radiostoleum)	225	,,
(*c*) Vitamin A (prepared from mammalian liver)	16	,,
(*d*) Vitamin D (Radiostol)	224	,,
(*e*) Olive oil	136	,,
(*f*) Treacle	261	,,

Every child is submitted to a detailed dental and physical examination at intervals of six months, the findings being carefully recorded. The data which have been accumulated up to the present time relate for the most part to children whose temporary teeth, with many of the permanent teeth, had already erupted at the beginning of the investigation, an average of about 19 per cent. of the teeth being already carious. This proportion was similar in all groups. The figures relate therefore to the influence of diet on the progress of caries in teeth which are already formed, and not to the effect on teeth in course of development. It was found, after four inspections representing one and a half years, that the percentage of teeth developing caries during this period in groups (*b*) and (*d*) was approximately half that in the control groups.

[1] Minutes of the Dental Board of the United Kingdom, November, 1930, Appendix IX., p. 12.

BRONCHIAL OBSTRUCTION.

WRITING on the mechanism of physical signs, Dr. Chevalier Jackson[1] discusses the signs produced by partial or complete bronchial obstruction by foreign body or neoplasm, and recognises three types of bronchial obstruction as follows: (1) The stop-valve obstruction, in which the bronchus is completely blocked so that no air can get either in or out, with the result that the residual air is absorbed and collapse of the affected portion of the lung follows with the usual signs of dullness, absent breath sounds, and displacement of the mediastinum to the affected side. (2) The check-valve obstruction can be demonstrated by bronchoscopy and may prevent the flow of air from entering the lung, but allow it to re-escape, thus producing atelectasis, or by acting in the opposite direction air can enter but not leave the lung, so that an area of emphysema is produced. Sometimes when a tumour is situated near the bifurcation of a bronchus it will block one branch during inspiration and the other during expiration so that the part of the lung supplied by the bronchus which is blocked only during inspiration will collapse, but the portion of lung supplied by the bronchus which is blocked only during expiration will become emphysematous. (3) The by-pass valve obstruction. Here the bronchus is only narrowed so that some air can enter and leave. An asthmatoid wheeze is heard at the open mouth of the patient in many cases though not audible at the chest wall.

One type of obstruction may alternate with or follow another and this can be seen by bronchoscopy. The importance of this method of examination and of treatment through a bronchoscope is becoming more recognised and the paper will be useful to those interested in this branch of medicine.

[1] Jour. Amer. Med. Assoc., Aug. 30th, p. 639.

BOVINE TUBERCLE BACILLI IN HUMAN PHTHISIS.

SINCE the two types of human bacilli have been clearly differentiated, almost all investigations have gone to show that ordinary adult phthisis is caused by the human bacillus and that for practical purposes the bovine bacillus may be ignored. In the current number of the *Journal of Pathology and Bacteriology* (vol. xxxiii., p. 1145) Dr. A. Stanley Griffith has collected together the available information which puts rather a different light on the question. In 926 examintations made in foreign countries all yielded human bacilli, which in three instances were mixed with bovine bacilli. The English investigations, mostly made by Dr. Griffith and his colleagues showed three examples of bovine bacilli in 327 sputa tested. On the other hand, in recent years, Dr. W. T. Munro, of the Glenlomond Sanatorium, an

others in Scotland, have found quite a surprising number of bovine infections.[1] Of 468 cases, 450 yielded human bacilli, 17 bovine bacilli, and 1 both. In a number of cases the bacilli were isolated from the sputum and tested on more than one occasion; a number were also tested by Prof. W. J. Tulloch. In two fatal cases autopsies were obtained and bovine bacilli were obtained from the lungs. There can, therefore, be no doubt that a fair proportion of cases of ordinary adult phthisis in Scotland are due to the bovine bacillus. The mode of infection is more difficult to be sure of. No evidence was obtained that any of the patients had acquired infection from a previous case. The clinical histories indicated rather a primary alimentary infection though, as Dr. Griffith points out, bovine bacilli are known in children to infect occasionally through the respiratory passages. If bovine infection accounts for 4 per cent. of cases of phthisis in Scotland, it is easier to understand how they may get into a fresh person by inhalation. The disease produced is not clinically differentiated from that caused by the human bacillus. Previous work has shown, though not very clearly, that bovine bacilli are relatively more important in other forms of tuberculosis in Scotland than in England; these new figures provide further reason for looking to the dairying industry.

READING IN HOSPITAL.

FROM the needs of wounded and interned soldiers during the war arose a keen realisation of the importance of books to the sick and unoccupied. The Red Cross War Library grew out of the work of Mrs. Gaskell and Mr. Hagberg Wright, and after the Armistice the joint council of the Order of St. John and the Red Cross granted a capital sum for the supply of books in hospitals, primarily to ex-Service men. The work has steadily extended to the civil population, and now over 2000 hospitals are supplied. Thanks to public gifts in money and kind, to the voluntary work of collectors throughout the country, and to volunteer workers in the wards and at the Central Library at Lancaster Gate, this service has hitherto been provided without any charge to the hospitals, but the time has now come when the organisers are obliged to make an appeal for assistance. We reported not long ago[2] a conference at Cambridge of members of the Library Association; the subject was discussed again at a meeting in connexion with the Public Health Congress last week. Dr. H. L. Eason urged the great importance of the personal distribution of books by a skilled librarian or voluntary worker, preferably somebody outside the ordinary routine of the hospital. Patients, he said, would not be allowed to help themselves indiscriminately from their medicine bottles, and the books should be given out to them by somebody who knew both book and patient. The President of the College of Nursing assured the meeting that if nurses had been an obstacle in the past they were so no longer, and the hospital librarian would receive a cordial welcome everywhere. Mr. C. E. A. Bedwell, house governor of King's College Hospital, suggested that if the nurses were now educated it was time to go on to the education of the chaplains, in whose hands the distribution of literature so often lay. Still more important, and certainly more delicate, is the provision of books for patients in mental hospitals, who have to spend many months in the limited social environment of their ward. Their case was eloquently put by Mr. L. G. Brock, chairman of the Board of Control, Dr. Doris Odlum, and Miss E. L. Macaulay, all of whom emphasised the great therapeutic value of reading and the necessity for a supply of clean and up-to-date books, distributed by a librarian with some psychological training. Fashions in thrillers and love stories change almost as quickly as fashions in hats, and patients will not read the popular books of the generation before last. Dr. Odlum pointed out that many of the patients in these institutions would be subscribers to public libraries if they were at home, and she suggested that some arrangement should be made with the librarians for the supply of books to them in hospital. She agreed with Dr. Eason that it was important for the books to be taken to the patient and not to be available only for those who were well enough to go to the library, and pointed out the value of persuading a patient to start reading —if only a paragraph a day—in bringing him or her back to social life. The proper use of books as a branch of therapy has been neglected too long; the hospitals are now alive to the need, but, as Dr. Eason confessed, it is largely a question of money.

[1] Five were reported by Dr. Munro, in THE LANCET, 1928, i., 384.

[2] THE LANCET, Oct. 4th, p. 777.

SOCIETY OF BRITISH NEUROLOGICAL SURGEONS.

THIS society has met twice in the course of the year. During the month of June, under the presidency of Sir Percy Sargent, a study was made of neurological surgery in Paris. Visits were paid to the clinic of Dr. André Thomas, who showed cases of surgical interest, including a demonstration of the pilo-motor reflexes, to our knowledge of which he has contributed so greatly. At the Salpêtrière cases were shown by Prof. Alajouanin. Mr. de Martel performed several neurological operations, and Dr. Clovis Vincent did a laminectomy for an intramedullary tumour of the cord. At the November meeting just held in London Mr. Bathe Rawling and Mr. C. P. G. Wakeley performed operations at the West End Hospital for Nervous Diseases, Regent's Park, while Dr. Worster-Drought and Dr. Carnegie Dickson demonstrated cases and pathological specimens and the like. Mr. Lambert Rogers made a communication on the nature of the foramen of Magendie. The annual dinner was held at the Langham Hotel in the evening.

HOSPITAL FOR TROPICAL DISEASES.

WITH the opening of new wards and of a clinical lecture theatre at the Hospital for Tropical Diseases in Endsleigh-gardens, another landmark has been reached in the history of that remarkable venture. Mr. William Lunn, Under-Secretary for Dominion Affairs, who formally opened the additions on Thursday of last week, said quite truly that, with one possible exception, no other branch of medicine has grown and developed in so short a space of time. It was only in the last year of the nineteenth century that, under the inspiration of Patrick Manson, the governors of the Albert Dock Hospital consented to the attachment of a school of tropical medicine. Growth was so vigorous that on coming of age the combined school and hospital was well able to occupy the magnificent building in Endsleigh-gardens, designed by Mr. Stanley Hamp, which was in the gift of the Joint Council of the Order of St. John of Jerusalem and the British Red Cross Society. And five years ago, when the school was transferred to Keppel-street to become a part of the London School of Hygiene

and Tropical Medicine, the nominal divorce was no catastrophe to the hospital, which obtained the space it then needed for expansion and improvement, while it retained the coöperation in daily work along with a free exchange of facilities with the other. Before the formal opening Sir Walter Fletcher delivered an address on the work of the hospital and on its value as a centre for clinical teaching and research in tropical medicine. He commented on the threefold work of the hospital. Its patients are drawn from the contacts of our seafaring trade, from the coasts of India, Ceylon, and Burma, from the Gold Coast, and from the Malay States. All classes are helped without regard to colour, to creed, or to social rank. They include officers and men of the mercantile marine, planters, engineers, missionaries, traders, the explorers who develop the Empire, and the servants of the State who administer it in all its various and distant parts. Its second great function was the development of Manson's idea to found a school for affording instruction in tropical medicine to medical officers in the colonial service, and the lecture theatre was to perpetuate Manson's name. The hospital had further inestimable value in the training of nurses to meet the special problems of disease in tropical climates. Finally, it was a centre of research inseparable from the daily work of the healer or teacher, and the only source of progress in the cure and prevention of disease. Manson had himself taught the lesson that the clinician dealing with disease must acquire his own skill in the technical methods of the laboratory. But in spite of the work of Manson and of Ross malaria had not yet been conquered. There were to-day more, not fewer, sufferers from malaria in India, and even in the tercentenary year of the introduction of Jesuits' bark, physicians were, Sir Walter said, still ignorant which constituent of the bark was the most effective against malaria. He wished the hospital well, not only for the sake of sufferers from disease, but for the sake of the better development and greater happiness of every part of the Empire. The new wards, pathological laboratories, and demonstration theatre have been added at a cost of £13,000, raised by the efforts of Sir Leslie Wilson.

ERNST FUCHS.

THE death last Sunday in Vienna of Hofrat Prof. Ernst Fuchs in his eightieth year removes one who had come to be known as "the grand old man" of ophthalmology. Few can have had a wider circle of friends and acquaintances, and many, in countries as far apart as Austria and China, India and America, will feel sad that they will see him no more. His dinner parties at his delightful home in Vienna in pre-war days were usually of the nature of an international gathering. Fuchs was an excellent linguist and an ideal host. A great traveller, there can be few countries of any note he had not visited. He was a very hard worker and a prolific writer. His Text-book of Ophthalmology, one of the best medical text-books ever written, has run through some dozen German editions, half a dozen English ones, and has been translated into many other languages. Fuchs, like many great men, was a very humble one. He would ask anyone working in his clinic who possessed special knowledge to impart it to him. He would discuss sympathetically any difficulty or problem with those far inferior to himself in knowledge and give of his best to them. Few, if any students, left his clinic without a feeling of regret and a real affection for the man himself. Fuchs was formerly a wealthy man but the war left him impoverished. How he faced that difficulty at an advanced age, and overcame it by working abroad, is a testimony both to his personal courage and to the esteem in which he was held outside Austria. In this country his name will be put in the niche of fame alongside those of Bowman, Donders, von Graefe, and Nettleship.

GRÜNFELDER'S TOE REFLEX.

Dr. Hildegard Rothe [1] has published the results of investigations made at the Berlin Children's Hospital into the reflex recently described by Grünfelder. This reflex, which is of interest to otologists and to pædiatrists, consists in dorsal flexion of the great toe combined with a fan-wise spreading of the other toes. As described by Grünfelder,[2] it is elicited by continued pressure on an area of the skull at the intersection of the lambdoid, occipito-mastoid, and parietomastoid sutures, which corresponds in the infant with a corner of the posterior lateral fontanelle; and it is found in the presence of disease of the middle ear in children up to the age of five years. It is especially in infants and young children that inflammation of the middle ear is difficult to determine and apt to escape recognition, and here Grünfelder's reflex may be useful if it proves reliable. Dr. Rothe has looked for it in about 150 children with disease of the ear, and in the same number of children with healthy ears. She finds that it is usually spontaneous, but that it is increased, and sometimes elicited when otherwise absent, by pressure on the region mentioned by Grünfelder; it does not always take the form originally described, but sometimes consists in dorsal flexion of the great toe with plantar flexion of the other toes, and sometimes in a fan-wise spreading of the little toes without marked dorsal flexion of the great toe; it is therefore not always equally easy to recognise. The reflex is crossed—that is, it is seen in the left foot in disease of the right ear, and vice versa. Dr. Rothe confirms Dr. Grünfelder's statement that it is found early in otitis media before visible changes in the drum membrane, and she associates it with increase of pressure in the tympanum. She found it present 98 times in 100 cases of acute otitis media before perforation, 12 times in 47 cases of suppurative otitis after perforation, and 3 times in 15 cases of mastoiditis with discharge; but not at all in 4 cases of Eustachian catarrh, and only 3 times in 150 cases of other illnesses without disease of the ear. When the reflex occurred after perforation of the drum there was usually insufficient drainage, with pulsation of discharge, redness, or swelling of the drum. In one case antrotomy was followed by fall of temperature and disappearance of the reflex. Of the three children with other diseases who showed the reflex, one was suffering from encephalitis, one had external otitis and one had rhinopharyngitis without showing any sign of aural disease on repeated examination. These findings suggest that the reflex is indeed a reliable indication of disease of the tympanum in young children.

Dr. C. S. Myers, who has been director of the National Institute of Industrial Psychology since its inception, has been appointed principal of the institute in order that he may devote the whole of his time to research and educational activities. Mr. G. H. Miles, D.Sc., who has been assistant director for several years, has been appointed director and will take charge of the whole of its practical activities.

[1] Deut. Med. Woch., Oct. 24th, p. 1822.
[2] Zeit. der Kinderheilk., 1929, xlvii., 641.

MODERN TECHNIQUE IN TREATMENT

A Series of Special Articles, contributed by invitation.

CCCXIII.—AFTER-TREATMENT OF SOME COMMON OPERATIONS.

PART II.*

OPERATIONS FOR SUPPURATIVE CONDITIONS.

AFTER operations for suppurative appendicitis, and those on the colon, 25 c.cm. of anti-gas-gangrene (*B. welchii*) serum should be given subcutaneously and may be repeated every three days in 10 c.cm. doses in bad cases. In adults, it is unnecessary to drain the peritoneum in most cases of gangrenous appendicitis, provided that the appendix in perforating has not discharged its contents into the peritoneum; a strip of corrugated rubber is inserted through the abdominal wall, going only down to the outer aspect of the peritoneum. This should not be removed before the fifth day. In children it is wiser to drain the peritoneal cavity in every case where a gangrenous appendix is found.

In suppurative peritonitis a tube is inserted into the pelvis large enough to allow of its lumen being cleaned and dried out each day with a long probe and dry ribbon gauze. This tube is turned daily and is kept in position until the purulent discharge ceases; there seems to be no advantage in removing the tube early, for this causes the abdominal wall muscles to close the track, and a residual abscess may result. When the tube is removed the track should be left open and not plugged with the so-called wick of gauze. I always fix an abdominal tube to the skin with a loop of silkworm gut which can be slipped over the end of the tube to allow it to be turned, after which the loop is replaced. If an abdominal tube should slip out prematurely, a not uncommon accident, no attempt should be made to push it back, for it is nearly always impossible to replace it in its original track; immediately after the tube has come out an adjacent coil of ileum takes its place. If the tube is then reinserted it passes into the pelvis on the wrong side of this coil, kinks it, and causes it to adhere to the old track of the tube. In this way the dangerous complication of acute obstruction of the small intestine is produced. If, then, such a tube comes out and needs replacement, an anæsthetic must be given, the wound must be reopened sufficiently for the introduction of one's finger into the pelvis, and a tube is replaced in its original relationship to the dangerous coil of intestine.

Acute mechanical obstruction of the small intestine is, perhaps, the most serious complication of pelvic peritonitis; it can usually be prevented by delivering, during the operation, the last coil of ileum from the pelvis and carefully peeling from it, and from the under side of its mesentery, every trace of lymph. Acute obstruction of this type occurs, as a rule, after the first week; its onset is sudden, and is indicated by two symptoms—colicky pain and vomiting—and it leads to very rapid exhaustion. The vomiting may not be present if the patient is being starved. Immediate operation is necessary, by reopening and perhaps enlarging the wound; the adherent coil of ileum is then delivered and examined, and it is usually not necessary to do more than remove the adhesions which are causing the kinks. Sometimes, however, so long a piece of intestine is involved in complicated bends and twists that it is better and quicker to do a rapid entero-enterostomy than to attempt to unravel it. In cases that have been allowed to go on to fæcal vomiting and severe distension, an enterostomy should be performed by inserting a small flanged tube into the coil above the obstruction; it is a simple matter to make the opening watertight by infolding sutures, and the coil may be replaced into the abdomen with safety, so that the subsequent fistula may close itself within a week or two.

A less common variety of obstruction is due to the parietal peritoneum not having been sewn up sufficiently closely round a drainage-tube, so that a knuckle of intestine escapes to lie either under the muscles or under the skin, and it becomes strangulated. Early operation, possibly involving resection of the coil, is necessary for this complication.

Drainage-tubes inserted into the pelvis should have very small lateral holes, because it is not uncommon for a fringe of omentum, an appendix epiploica, or the fimbriated end of a Fallopian tube to strangulate through holes of large enough size. Such an occurrence is revealed when the removal of the tube is attempted, and it calls for ligature and division of the adherent structure.

Spontaneous fæcal fistula occurs from time to time after operations for acute appendicitis, usually after the fourth day. The drainage-tube should be withdrawn and the patient placed in the supine position; this allows the track to become angulated and encourages its closure. Such fæcal fistulæ usually close spontaneously within a fortnight if the colon is regularly cleared of its contents, but occasionally an operation has to be performed to close the fistula.

Two varieties of *secondary hæmorrhage* may occur after an operation for appendicitis performed through a para-rectus incision; in one type there is external bleeding, in the other the hæmorrhage is into the colon and is evacuated from the rectum. The former variety usually results from erosion of the deep epigastric vessels or their tributaries, and calls for immediate exploration of the wound and ligature of the vessel above and below the bleeding-point. The internal type of hæmorrhage is due to ulceration of the cæcum at the site of the base of the appendix; the abdomen should be opened, the cæcum freed and delivered, and the ulcerated and bleeding area should be infolded by deep sutures.

Residual abscesses are usually the result of removing drainage-tubes too soon; they are particularly liable to occur in children, and are most commonly placed in the recto-vesical pouch. It is true that such an abscess can sometimes be left to develop until the appearance of mucus in the rectum shows that the abscess is adherent to the rectal wall, through which it is then opened, but I believe that it is better not to wait for this stage but to drain the abscess from above as soon as it is diagnosed; its signs will be the recurrence of fever and the palpation of a mass on rectal examination.

A fairly common position for residual abscess, again in children, is above and in front of the bladder; here it is easily palpable, but the swelling is apt to be overlooked, owing to its close proximity to the pubes. Abscesses in this position are adherent to the abdominal wall, and should be drained through a fresh incision without reopening the general peritoneal cavity.

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* Part I. appeared last week.

SPECIAL ARTICLES

GENERAL MEDICAL COUNCIL.

PRESIDENT'S ADDRESS.

AT the opening of the 132nd session of the Council on Nov. 25th, Sir Donald MacAlister, the President, alluded to the death of Sir Francis Champneys, a former member of the Council, who held a unique place in the important branch of practice to which he had devoted himself, and whose counsel was sought and valued since his retirement; to the appointment by the University of St. Andrews of Prof. David Waterston as its representative; and to the knighthood conferred on Sir Norman Bennett, a former Crown member of the Council.

INDIAN MEDICAL DEGREES.

"The India Office," said Sir Donald, "has communicated to us the report of a conference of provincial and university representatives, held at Simla during the summer, for the purpose of considering the creation of an All-India Medical Council. After a full and frank discussion of the position, it was agreed that the creation of such an All-India organisation, for the purpose of maintaining a uniform standard of qualifications for the graduates of Indian universities, is essential and acceptable in principle. Resolutions concerning the constitution and functions of the proposed Council were adopted, and commended to the Indian Government as the basis of central legislation; and it was urged that without undue delay the necessary steps be taken to bring the new law into operation. The Council cannot but express its satisfaction that a solution of the vexed question of Indian medical standards, applicable to the whole of British India, should be practically envisaged by the Government of India; and that the responsibility for maintaining these standards, especially in relation to their extra-Indian aspects, should be assumed by a central Indian body having statutory authority. The application of Part II. of the Medical Act, 1886, was made in 1892 by Her Majesty in Council to India as a whole, without reference to its Provinces. The Council has accordingly, throughout its discussions on the subject of Indian medical qualifications, continued to look to the Central Government for the information and the guarantees without which its functions under the Act cannot be properly performed. It therefore counts with confidence on the speedy establishment of a Central Board or Council for India, comparable with the Medical Boards or Councils of other parts of the Empire with which this Council is in regular official communication, and to which it can refer for authoritative information on all questions of local professional qualifications and standards.

"Communications have been received from India suggesting, that pending the establishment of the All-India Council, special and exceptional measures should be taken by us for the recognition of medical degrees granted by the Universities of Bombay and Rangoon. The Executive Committee have given careful consideration to these applications, but have come to the conclusion that it would not be expedient or indeed just to accede to them until the question can be dealt with as a whole, under conditions which would justify the Council's guarantee of their sufficiency."

AUSTRALIA AND CANADA.

"As regards the Commonwealth of Australia and the Dominion of Canada, the position at the present time happens, for historic reasons, to present a different aspect. The several States of Australia, and the several Provinces of Canada, may by Order in Council enter into relations of reciprocity with this country separately. But no such Order in Council has been made applying the Medical Act, 1886, to the Commonwealth as a whole, or to the Dominion as a whole. If at any time Australia or Canada should choose to establish a Central Board and a single standard of qualification, reciprocally recognised by the several States or Provinces, and valid over the whole territory, it would remove certain disabilities and difficulties encountered now by their own medical graduates, and simplify the procedure of recognition and registration in this country. It would then rest with His Majesty in Council, if so advised, to apply Part II. of the Medical Act, 1886, to the Commonwealth or to the Dominion, as it is now applied to British India. As the method and the results of establishing reciprocity between the parts of the Empire are somewhat complex, and owing to circumstances diverse in different cases, I have, at the request of the Privy Council, had a memorandum drawn up by the Registrar, setting forth the particulars of the existing law. This has been received by the Executive Committee and approved for circulation."

FRANCE.

Further correspondence had taken place with the French Government on the question of permits to British practitioners to practise in hospitals established in France for British patients. "The French law," said the President, "appears to be definite, that such British practitioners must possess French qualifications; but negotiations are still going on, and the question is not yet closed. As I pointed out in May, the British law expressly permits French practitioners, not registered in this country, to act as medical officers in hospitals established here for 'the relief of foreigners in sickness.' What is desired is that, if practicable, some corresponding concession should be authorised in France."

Committee Work.

The interim report from the Departmental Committee on Maternal Mortality and Morbidity had been referred to the joint committee of the Education and Examination Committees which already had under consideration the report of the Medical Officers of Health Committee on education and examination in preventive medicine. Inspectors and Visitors of Final and Qualifying Examinations had been active during the recess in attending on the several licensing bodies, and an interim report on certain features of the examinations might be presented. The Public Health Committee was to report on certain proposed changes in the rules now in force for diplomas in public health. The Pharmacopœia Committee would present a report setting forth the progress made in drafting the text of the next British Pharmacopœia. It now appeared impracticable to complete the text by the end of the year as had been hoped. Meanwhile the Committee had authorised the issue of a first report of the Pharmacy Subcommittee, giving a list of proposed changes in the method of preparation of

certain pharmacopœial articles. Effective coöperation with the revision committee of the United States Pharmacopœia Convention had been assured. The problem of attestation and evaluation of certificates of attainments, &c., presented by students from overseas, applying for admission to medical schools and universities in this country, had been the subject of inquiry and discussion by the Special Committee appointed for this purpose. Valuable progress had been made, and negotiations opened up with authoritative bodies abroad, more particularly in the United States. These promised to put the question on a satisfactory footing, and to meet the convenience of medical schools and examining bodies in both countries.

At the conclusion of his address a vote of thanks to the President was proposed by Sir Leslie Mackenzie and seconded by Sir Norman Walker. The Council then passed to the consideration of disciplinary cases.

PAINTING AND THE HEALING ART.

LLOYD ROBERTS LECTURE.

Prof. William Rothenstein, Principal of the Royal College of Art, South Kensington, delivered the eighth Lloyd Roberts Lecture before the Medical Society of London on Nov. 19th, the President of the Society, Dr. R. A. Young, being in the chair.

Prof. Rothenstein, who took for his subject Painting and the Healing Art, said that nothing seemed to him more absurd than the distinction which was made between material science and idealistic art, which were both devoted to the pursuit of truth for its own sake. Neither art nor medicine could be called exact studies, but science, art, religion, and, indeed, philosophy, which all dealt with the real things of life, invited the most frequent charlatanism. There seemed little doubt, however, that in mediæval times artists were the precise thinkers, and he found it constantly difficult to believe, when he realised the extreme intellectual power of the mediæval artists, that they had in them even the elements of charlatanism. It was the more difficult from the point of view of art, when looking at the mediæval period, to believe that scientific men, particularly doctors, could have been associated with the tenets of astrology to the extent that the historian would have us believe. The historian of to-day might blunder similarly. Anyone looking at the mass of literature exposed on the railway bookstalls would find it difficult to believe that we had real writers and real thinkers.

THE ARTIST AS HUMANIST.

In the same way, he continued, in mediæval times the more serious side of life, as represented by the sciences—for example, medicine—was only familiar to the few, while the manifestations of quackery were obvious to the many. The humanistic side of life had always had its appeal among creative people, and this was as strong in the past as it is to-day, and came out in works of art produced under high patronage. Church and State used the artist's powers for purposes of advertising. Kings commissioned him to show the terrible things that would happen if anybody went against them, as the Assyrian and other sculptures in the British Museum show. In the same way the Church used the artist to show what would happen to disobedient people, the awful tortures that would be inflicted on those who did not obey the Church, and the blissful future of those who did. It seems very unlikely that physicians, physicists, and men of science of every kind were really devoted to alchemy and astrology to the extent illustrations in mediæval books lead us to believe; and popular histories may be misleading.

After reference to the knowledge of medicine and surgery possessed, from the earliest days, by Eastern peoples, the lecturer went on to show that mediæval pictures, painted by artists at the behests of the Church, showed profound sympathy for human suffering by depicting the actions of the saints in performing so many of their miracles. The number of pictures of saints performing miracles to remove or relieve sickness was, he believed, larger than the number of pictures devoted to other subjects. The artists believed in the truth of the underlying motif of these pictures, and pursued it for use in the service of any master. A student of early painting showed that there were more paintings illustrating the lives of the saints, subjects which allowed of an enlightened humanism, than motives from the Old or the New Testament. In the days of the Middle Ages, when terrible wars were devastating Europe, artists used all the latitude allowed them by the Church to inculcate pity for the suffering in the depicting of miracles, and the portrayal of these scenes included dignified and noble figures who often represented the scientific men of the period. Prof. Rothenstein could not believe that the dignity of these personages could be associated with humbug and charlatanism. The best way to understand the past was to understand the present. There were in mediæval times movements going through the world that those engaged in art and those engaged in healing were alike subject to. A desire to alleviate the general misery and a feeling for the beauty that was in the world—when the world was a much more cruel place than now—was shared alike by men of science, artists, and writers, while the emotional truth of a subject might be greater at times than the precise truth.

ART, SCIENCE, AND TRUTH.

During the Renaissance when medical science was beginning to assert itself, when the scientific spirit was ready to express itself freely, artists became interested in the more scientific aspects of art—namely, in perspective and anatomy. He doubted if the new Greek learning, coming suddenly into Italy, threw so great a light upon the directions of human endeavour as historians thought. The Greek learning allowed men who had suspected certain scientific truths to express them without being burned alive, and art enjoyed similar freedom. With reference to the study of anatomy, anatomical knowledge was not so necessary as many surgeons believe, because appearance may express what lies behind appearance. Ruskin preached the value of geological knowledge, but the artist worked with the eye, and a fine eye would see and express much that it did not understand from the scientific angle. Both the artist and the scientific man had intuitions. Both Newton and Einstein might conceive their intuitions of truth in a flash; they must spend months or years in proving their intuitions to be true: the artist had this advantage, he could express his at once. The medical man of any period, with a fine knowledge of the human heart, and through the practice of profound observation of what happens in life, was probably as good a medical man as many physicians of to-day, though without their equipment. It is profound knowledge of what happens every day

in this life which enables a man best to deal with its manifestations, and it was possible that a medical man of to-day with high scientific attainments might be following principles and formulas to no purpose, whereas another man with finer intuition, though less book knowledge, might in the end be of more service to mankind. The artist and the healer were actually at one; they were not pursuing different purposes; their common search was for truth, and both depended on intuitive faculties.

SOME APT ILLUSTRATIONS.

Prof. Rothenstein emphasised the points of his lecture by showing on the screen lantern slides of a number of paintings, and of the famous piece of sculpture, the "Dying Gladiator," all illustrating the devotion of the artist to the humanistic side of life. He pointed out that to make the enemy as noble as the friend was a sentiment which goes right through Italian painting, the dignity of humanity having first place.

The following are the subjects thrown on the screen with the names of the artists, and Prof. Rothenstein made running remarks while they were being shown. Fra Angelico and Domenichino, "The Distribution of Alms," the picture by Fra Angelico being the famous one of St. Nicholas. Carpaccio, "The Birth of the Virgin," when the lecturer pointed out that the feelings of order and tranquillity, of harmony and repose, showed a fine sense of contemporary medical care. In a drawing and a painting by Signorelli, he called attention to the extraordinarily living and vivid expression of the nude, and to the display of scientific understanding in the foreshortening. To the picture by Bellini "Circumcision by Rabbis," in the National Gallery, he drew attention as a fine, and even noble, representation of the operation, while of the picture by Lorenzo Lotto, "Portrait of a Doctor," it was difficult, he said, to believe that a man of such grave and splendid appearance could have been anything but a truthful scholar. Another picture by Domenichino, "A Saint Performing a Miracle," led to the comment that the artists in scenes of this kind probably painted their scientific friends; while of a picture by Ghirlandajo, depicting a man suffering from rhinophyma, he said it was difficult to imagine a modern person with courage to sit for such a picture. In a picture by Breughel, "the Blind leading the Blind," he said that the accuracy of representation was beyond praise; while he commended the realism and serious character of three pictures by Rembrandt, "Christ at a Sick Bedside," the "Lecture on Anatomy," and the fragment of a "Lesson of Anatomy." Of two famous pictures by Rubens, "The Descent from the Cross," and a portrait of his wife, the lecturer spoke with admiration. He pointed out that in the first the artist had been able to show wonderfully by depicting the loss of vitality the difference between the dead figure and the living figures. Of the portrait he said that the large eyes and prominent neck had been criticised as symptoms of the well-known association of goitre and a disease of the eyes, but he did not find such criticism sound. He held that the full neck and large eyes were used to exaggerate the subject's beauty; art and science parted company here, and to criticise a slight exaggeration of human loveliness is using the scalpel too early. Of one of the many pictures by Velasquez representing dwarfs, he said that the method of presentation was humanistic, no spirit of ridicule entering in.

Prof. Rothenstein's address was followed closely by a large and appreciative audience.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

ANNUAL MEETING OF FELLOWS AND MEMBERS.

THE annual meeting of Fellows and Members was held in the theatre of the College on Nov. 20th, Lord Moynihan, the President, being in the chair. Five members of the Council, two other Fellows, and fifty Members attended the meeting.

THE ANNUAL REPORT.

The President referred to the decision to hold a Primary Fellowship examination in Australia next year; the first awards of the Diploma in Gynæcology and Obstetrics, the Macloghlin scholarships, and the Mackenzie Mackinnon research fellowships; the award of the honorary gold medal of the College to Prof. G. Elliot Smith and Mr. R. Lawford Knaggs; and generous grants which had been made by Lord Melchett, Sir Louis Baron, and Lord Beaverbrook for the endowment of research scholarships in the College.

Dr. Richard Gillbard asked what were the receipts during the past year from the granting of Fellowship and Membership diplomas, what were the figures for the attendance of members of the Council at meetings, and whether it was possible for men to become Fellows without having previously passed the Membership examinations. Dr. David Roxburgh asked the reasons for holding a Primary Fellowship examination in Canada, suggesting that such examinations would lower the standard of the Fellowship.

The President replied that the net receipts from the granting of diplomas in the past year had been £5692 on Membership diplomas and £2326 on Fellowship diplomas; he commented on the diligent attendance of members of the Council as shown by the figures given in the report. The question of examinations in Canada had been dealt with fully at the annual meeting last year; it was one to which the Council had given the most careful attention, and there was a consensus of opinion that these examinations were to the advantage both of the College and of surgery.

DIRECT REPRESENTATION OF MEMBERS.

Mr. Ernest E. Ware then moved:

That this forty-second annual meeting of Fellows and Members of the Royal College of Surgeons again affirms the desirability of admitting Members, who constitute nine-tenths of the College roll, to direct representation on the Council of the College. That the result of the recent poll of Members resident in the United Kingdom and the Irish Free State (taken by the Society of Members in response to reply of the Council, Dec. 12th, 1929), which is as follows:

Cards sent out	12,766	Against representation	156
Cards returned	166	Majority in favour ..	6676
Cards not valid	58	By personal canvas in favour	106
In favour of representation	6832		

provides indisputable evidence that this change in the constitution of the College is desired by a very considerable number of the Members of the College.

Mr. Ware emphasised the justice of his appeal, which accounted for the persistence with which similar resolutions had been moved for over 40 years, and commented on the absence of rancour at recent annual meetings. Direct representation of Members would strengthen the position of the Council of the College. The statements made by the President at the last annual meeting and by the Council in their reply to the resolution then passed had been taken

as evidence that the Council viewed this question with an open mind; thus encouraged, the Society of Members had taken a poll of the majority of Members of the College; lack of funds had rendered a poll of the complete body of Members impossible. He remarked on the convincing majority shown by the figures embodied in the motion, and stated that it was desired that a certain number of Members should be elected by Members to sit on the Council of the College.

Dr. Windham L. Gillbard, seconding the motion, referred to the fact that 55 per cent. of the Members to whom cards had been sent had replied, and that, of those who had replied, 96 per cent. were in favour of the direct representation of Members. Dr. Arthur Haydon, speaking in favour of the resolution, advocated a geographical representation of Members on the Council. The College, he said, ought to be in a position to defend its Members against competition from unqualified practitioners. Dr. F. W. Collingwood said that men who were doing such important work as the Members ought to have a better status in the College. Dr. T. Wilson Parry, admitting that from a legal point of view Members had no case, appealed to the ethical justice of the College. Other speakers in support of the resolution were Dr. Howard Stratford, Dr. Richard Gillbard, and Dr. Edwin D. Kite.

The President said the question of direct representation of Members had always been regarded by the Council as a matter of the gravest importance, and had always been debated without ill-feeling. The Council this year had decided to meet in committee to consider the resolution passed at this meeting, the proceedings of which would be duly reported to them.

The question was then put and carried by 43 votes to 1.

ROYAL SOCIETY OF MEDICINE.

ANNUAL DINNER.

THE annual dinner of this Society took place on Thursday, Nov. 20th, at the May Fair Hotel, the chair being occupied by Dr. T. Watts Eden, President of the Society. H.R.H. the Duke of York was the guest of honour and the Bishop of Birmingham (Right Rev. W. E. Barnes) was also a specially invited guest. There was a large and distinguished attendance. The toast of "The King" having been duly pledged, the Duke of York proposed "The Royal Society of Medicine."

His Royal Highness referred to the great history of the Society, with that of its precursor, the Royal Medico-Chirurgical. In the rush of everyday work it was good for Fellows to meet annually in this way to renew their good fellowship, and in a tavern, where many great movements had originated. He diagnosed, especially in view of its undoubted appetite, that the health of the Society was good, so that it might be good advice to take "cures" at a tavern instead of going to Bath and Harrogate. He especially admired the aim of the Council to stimulate and encourage its Fellows in their labours, however scattered they might be in the outposts of Empire. There was every reason to be proud of the wonderful library, and of the new method of sending to remote places photographs of important scientific documents and treatises. The "Proceedings" must also be a most valuable publication, especially to those unable to attend the meetings. Realising that this great Society had been built up by the enthusiasm and devotion of members of the profession, the better to equip themselves for their warfare against pain and disease, he felt honoured that he had been asked to propose the toast.

The President, in responding, said that a new conception was growing up in the public mind concerning the primary function of the doctor—namely, that it was to keep the citizen in good health, that of attending to his ailments being secondary. Such a conception had been powerfully stimulated by the series of informative reports which had been issued by the Ministry of Health in recent years. Some time must be allowed, however, to give opportunity to the profession to adjust itself to this new conception. One of the most important tasks of the sections of the Society was to examine new methods and scrutinise the data on which such methods rested, so as to assess their value for practical application. The acknowledged differences of medical opinion met with was a constant topic of comment by the public, some of whom regarded it as a weak spot in the profession, but the speaker thought it fairer to regard it as an evolutionary phenomenon, leading, all hoped, to eventual progress. And the medical was not the only profession in which lack of uniformity of opinion was marked; witness the theological. Dr. Watts Eden referred briefly to the increasing complexity of the terminology in which the discussions at the different sections were now carried on. The need for a clearing-house of medical opinion was greater now than ever before; research was in the air, and the demand for it was great, but the profession never forgot that it exists to render practical service to the community. The Society had means, collectively, of examining the whole of the field, much of which was always new, and of arranging the patchwork results of research into useful patterns.

The toast of "The Guests" was proposed by Dr. F. M. R. Walshe, who, after expressing the special gratification of the Society in the presence of His Royal Highness, said that he would depart from custom in the toast that had been confided to him, knowing how deep-seated in the Anglo-Saxon temperament is the abhorrence of public eulogy, so that when the public orator at an ancient University introduces the recipients of honorary degrees, he does so in a Latin speech, public praise being tolerable to its subject only when spoken in a tongue that no one present can understand.

"I am resolved," he continued, "that our guests shall not suffer embarrassment at my hands, and I feel that I shall best consult their pleasure by explaining their hosts to them. This is not the bizarre suggestion it may appear. For if that grotesque figment, the doctor of the novelist, the playwright and the journalist truly embodies the public conception of us, we are sadly misunderstood. A number of unexpected components go to make up the doctor of modern fiction. First and foremost he must be a surgeon; a surgeon of incomparable skill and strong sex appeal. He lets blood copiously with long sensitive fingers and the calm of the strong silent man. When he is not being followed round the wards of his hospital by flocks of adoring students, he runs a busy general practice. He has neither wife nor encumbrances. He charges his patients no fees. Finally, he is invariably a source of ignoble jealousy in his colleagues. I have never seen it explicitly stated, but I am convinced that he wears a fur-lined overcoat and travels first class on the railway. In this, indeed, he comes nearest to the true surgical tradition. Even the less wholly extravagant medical

creations of that gay exploiter of the half truth, Mr. Bernard Shaw, are but changelings and bear no more resemblance to the doctor than does a presentation portrait by a modern artist really depict the features of its defenceless subject. It would not be candid of me to maintain, however, that we are not ourselves somewhat to blame for the popular errors concerning us. The medical profession rarely speaks with an authentic corporate voice, though it is possible that a guileless public may so regard the sententious twaddlings of that modern Mrs. Harris, 'the Harley-street specialist' of the press. But there are other reasons which make it inevitable that we should be misunderstood. For instance, some of the most familiar words in the language have a special meaning for us; a meaning that has no currency elsewhere. Take that simple word 'evidence.' To us, this implies the concise statement of some fact of careful observation. To the lawyer, on the other hand, it means a statement, any old statement, uttered by any light-hearted gossip to whom the courts in their inscrutable wisdom may decide to listen. Finally, to the politician—but there are lengths to which candour may not be pushed, and before this audience I dare not utter the hearty monosyllables that alone are adequate to a definition. I will not go on elucidating the little differences that render us doctors such a puzzle to our fellow-men. In legislation and in jurisprudence to be incomprehensible is to command respect, and in modern art and poetry to be unintelligible is the hall-mark of true genius. Therefore, I hesitate to withdraw from our profession what of mystery still surrounds it, and content myself with giving you the toast of 'Our Guests.'"

Dr. Barnes, in responding, said that the ancient Egyptians had at their evening feasts, on such an occasion as the present, a memento in the shape of a mummy, and perhaps this Society regarded its guests as either examples of past success or as objects of potential experiment. Perhaps, as a guest, he was expected to tell members of the profession how they were judged from the outside. First, he wished to express the indebtedness of the whole community to the medical profession; especially because of the advances made in medicine and surgery during the last century. He had recently been reading the diary of a Somersetshire parson of a century ago, and was struck by the comparative softening of manners in the present day and the decrease of coarse viciousness; but he was most impressed by the alleviation of pain and suffering due to the progress of medical science and the establishment of our public hospitals. Surgery especially had been transformed by anæsthetics and aseptic practice, and progress in technique merited the term magnificent. The exactness and skill of British surgeons was inferior to none in the world. But though he and his relatives owed much to surgery, it must be regarded as a rough and rather crude way of dealing with the diseases of the human body. Was it a vain dream to look for the time when disease would be overcome either in Nature's way by increasing the resistance of the body to hostile organisms, or by remedying defects in internal chemistry? We were, as yet, only at the beginnings of knowledge concerning vaccines and vitamins. Laymen need not be troubled because doctors disagreed; in fact when they agreed too closely there seemed ground for suspicion. Medicine could not yet be called an exact science, and an exhilarating feature of scientific research was that one never knew in what region the next discovery would be made. At the end of the nineteenth century it seemed to many that the great era of physics had closed, yet the fact was that an even greater era than that of Faraday, Maxwell, and Kelvin was only just beginning; the period of those great minds was but the twilight before the dawn in the matter of present discovery and promise. At any time there might come in medicine a group of discoveries in biochemistry which would make it possible to confer on the body an immunity from ill-health such as now was enjoyed only by exceptional individuals. In spite of various kinds of disorder, the bishop declared, it was good to be alive. Never since the Golden Age of Greece had mental energy been more fertile than now. Naturally, old beliefs had crumbled and traditional standards of conduct had been sharply challenged, but, he declared, the gain outweighed the loss. Those who believed, as he himself did, that the Moral Law was part of the fundamental structure of the Universe would not fear its failure to withstand frank criticism; if religious dogmas proved to be untrue, let them pass. Dealing with the subject of eugenics, Dr. Barnes said that medical skill and public hygiene would ultimately be disastrous if they preserved inheritable mental and physical defects in humanity; it was known that dysgenic mutations could occur, in plants as well as in animals. Medical science destroyed the power of hostile environment, but usually it left inheritable characters untouched. The existence of mentally and therefore socially dysgenic mutations was a grave menace to the welfare of the community; already mental deficients constituted 1 per cent. of the community, and more accurate genetic knowledge was needed. A beneficent millionaire might well provide laboratories and a chair in genetics at our great universities. Investigations had shown that life had existed on the earth for quite 1000 million years, and it seemed that the intensity of the sun's heat had changed but little in that vast time; so that we could look forward to 500 million more years during which humanity could flourish on the earth. But civilisation, as measured by the art of writing, was not yet 10,000 years old; what, then, would happen in the inexhaustible future? Would medical science actually conquer disease, and would the descendants, enjoying this powerful brain and perfect body, create an Utopia? He could ask these questions without anxiety, and hear the answers without dismay, for he felt certain not only that man's permanent habitation was not on the earth, but also that his spiritual achievements were imperishable. In the average man as known to-day there was much that was worth preserving. In regard to aspirations and achievements, moral loyalties, love and service, his own faith was that they would not vanish as though they had never been; they were eternal, they were beyond time and space, for they were in that realm which the Christian had learned to call the Kingdom of God.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

BERLIN MEDICAL SOCIETY.

THE Berlin Medical Society celebrated its seventieth anniversary at a meeting attended by representatives of the Government Health Department, the City of Berlin, the Medical Faculty of the University, and of other medical societies. The president, Prof. Goldscheider, gave an account of the development of medical science during the past 70 years. The honorary secretary, Prof. Adam, described the history of the society which issued from a fusion of two smaller societies. The

number of members was at first 180 but is now about 1600, although many other special societies have meanwhile been created, of which the Society for Internal Medicine, founded by a number of physicians leaving the Berlin Medical Society in 1881, is the biggest. The society originally held its meetings in various places, but in 1892 rooms were hired in the Langenbeck House belonging to the German Surgical Association. Eventually the two societies together erected new premises called the Langenbeck-Virchow House which was inaugurated in 1915 during the war. The first president of the society was the celebrated ophthalmologist Græfe, who was succeeded by Langenbeck, Virchow, Senator, Orth, and Kraus. Prof. Goldscheider entered on office last year.

A CARDIAC HORMONE.

Prof. Zuelzer recently reported to the Berlin Medical Society on his clinical experiences of eutonone, a cardiac hormone discovered by him in the liver. Eutonone, he says, increases the muscular action of the heart—that is to say, the tone is increased. It has no cumulative action like digitalis, so that in severe cases six or eight injections may be given without undesirable symptoms. In healthy hearts which are still able to answer ordinary demands, though already unfit for great strain—for instance, in everyone over fifty—the reserve power is improved. Eutonone is also efficacious, it is claimed, in acute infectious diseases. Prof. Zuelzer said that during the last epidemic of influenza he treated in his hospital a series of pneumonia cases with no other cardiac remedy and found that in these cases the heart was undamaged, whereas in patients treated with other compounds cardiac murmurs often developed. Its administration is further appropriate before severe operations and for training; after being treated with eutonone fast runners showed greater efficiency, less fatigue, and no cardiac palpitations. By its dilating action on the coronary arteries eutonone is useful in angina pectoris; most of the cases of moderate severity lost their pains within two or three weeks. In chronic myocarditis the destruction of the heart muscle cannot, of course, be repaired, but the reserve power of intact parts of the heart muscle is strengthened so that the patients loose their troubles. Dyspnœa disappears and patients who came to the hospital with severe orthopnœa were able to sleep on the same or the next night without morphia.

PSITTACOSIS.

The epidemic of psittacosis which broke out some time ago in Germany led to severe measures which reflected great nervousness in official and medical circles as well as among the lay public. As a result of this nervousness a consignment of 180 valuable parrots was destroyed by gas under the order of the Hamburg health authority without any previous examination, although none of them showed any symptom of disease. The proprietor of the parrots has now brought an action for damages against the city, alleging that there was no reason to destroy the parrots at once; even if they were suspected, quarantine would have been sufficient. He says that the manager of the celebrated Hagenbeck Zoological Garden in Hamburg intended to buy the parrots after their arrival which shows that there was no suspicion that they were ill.

STATISTICS OF RHEUMATISM.

Statistical records show that of the invalids in the Berlin municipal hospitals for the incurable 7 per cent. suffer from chronic rheumatism. As to acute cases it is stated that in the Charlottenburg municipal hospital, for instance, 4·3 per cent. of all the patients received during the last three years suffered from rheumatic diseases. The number of 7 per cent. invalids is much smaller than in other countries—e.g., 9 per cent. in Sweden, 12 per cent. in Denmark, and even 18 per cent. in England are recorded. Invalidity began in 66 per cent. before 60, in 38·5 per cent. before 50, and in 15·5 per cent. before 40 years of age. The average duration of the illness is in Berlin 15 years and of invalidity 10 years. In the city of Berlin the expense of the individual arthritic invalid amounts to 14,500M, and for all the rheumatic invalids together to 3,295,000M. A familial history of the disease was obtainable in 35 per cent.; exogenic causes were chills, infection, and trauma. Among women working with laundry or in draughty places like market halls increases liability to rheumatism. Among men, the rheumatic occupations are those of stoker, baker, mason, and coachman.

A NEW SANATORIUM FOR LUPUS PATIENTS.

There are very few sanatoriums for lupus in Germany compared with the great number of sanatoriums for tuberculosis of the lungs and of the bones and joints. There is, indeed, only one sanatorium of the kind at Giessen under the direction of Prof. Jesionek, the dermatologist of Giessen University; the second sanatorium for lupus at Graudenz, Western Prussia, became Polish after the war. The German committee for the combat of tuberculosis has now erected a new sanatorium in Müncheberg near Berlin. At the opening the president of the German Health Office, Prof. Hamel, said that lupus is much more widespread in Germany than is generally believed; in Westphalia alone 2000 lupus patients, and in all Germany about 50,000 are registered. The new sanatorium has arrangements for modern treatment, especially for the different irradiation methods and for the Gerson diet. The number of beds is 30 for adults and 15 for children.

RADIOGRAPHY IN OBSTETRICS.

Dr. Baumann reports on the value of radiography to the obstetrician, especially when manual examination fails. By radiography the position of the fœtus, the disproportion of the head and the pelvis, the success of turning, twin pregnancy, deformities of the fœtus, such as hydrocephalus and anencephalus, can be made visible. In narrow pelvis not only the size of the fœtus is ascertained but also the size and the form of the head and its presentation.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

STATISTICS OF B C G.

IN a communication made to the Académie de Médecine on Nov. 4th, Prof. Calmette brought the statistics of B C G up to date with certain figures of exceptional interest. At the present time every seventh infant born in France is vaccinated with B C G—i.e., 8000 to 9000 infants every month. The total number of persons thus vaccinated in France up to Oct. 1st, 1930, is 280,000, and this figure does not include 112,000 infants vaccinated in the French colonies and protectorates. About an equal number have been thus vaccinated outside French territory, and every European country, with the exception of Austria, Great Britain, and Portugal, has introduced B C G vaccination. The countries in which it has been most extensively adopted and yielded instructive results are Greece, Poland, Roumania, Spain, and Sweden. In Roumania more than 60,000 infants

have been vaccinated. In Sweden, in the province of Bothnia, where there is much tuberculosis, 4009 infants were vaccinated between September, 1927, and May 1st, 1930. In the same place and period, it is stated, there were 8342 infants who lived under the same conditions and who, not being vaccinated, served as controls. During these three years, the mortality for the non-vaccinated was 22·2 per cent., whereas that for the vaccinated was only 6·6 per cent. Prof. Calmette presented a table of statistics gleaned from Germany, Belgium, Bulgaria, Spain, Greece, Hungary, Poland, Roumania, Russia, Sweden, Czecho-Slovakia, Yugoslavia, the Argentine, Brasil, Canada, U.S.A., Mauritius, and Uruguay. As he pointed out, a comparison of the tuberculosis death-rates among vaccinated and non-vaccinated infants is apt to be misleading, because it is exceptional for the cause of death to be determined by a doctor, whereas if a comparison is made of the general death-rates in the two groups, every death from tuberculosis is counted in one or other of the two groups. Another interesting comparison was that made between two different age-groups—the first month of life and the last eleven months of the first year of life. B C G vaccination not having had time to be effective during the first month of life, no difference could yet be expected in the death-rates in the vaccinated and non-vaccinated groups. But there should be a difference in the second age-period in favour of the vaccinated if B C G possesses the merits claimed for it. The correctness of this hypothesis, said Prof. Calmette, has already been proved in Bulgaria, where the death-rates in the first month of life have been approximately the same for the vaccinated and non-vaccinated, whereas in the second age-period, from one to twelve months, the death-rate was 11·4 per cent. for the non-vaccinated and 5·6 per cent. for the vaccinated. In France, in the Department of Guebwiller (Upper Rhine) there were 478 births in 1925; none of the infants born in this year was vaccinated. Everyone of the 445 infants born in 1928 was vaccinated with B C G. The death-rate during the first month of life among the infants born in 1925 was 2·7 per cent.; for the infants born in 1928 it was 2·76 per cent. But in the age-period from one month to a year, the 1925 death-rate was 5·1 per cent., the 1928 death-rate only 1·37 per cent. Though it might be argued that the mothers who got their infants vaccinated would also in other respects care better for them than the mothers who did not get their infants vaccinated, this possible source of error can be eliminated in the case of the dispensary infants. These (constituting the majority) were under the supervision of visiting nurses who would devote equal care to the vaccinated and the non-vaccinated.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

THE NEW RECTOR OF ABERDEEN UNIVERSITY.

THE medical profession may well be gratified that the students of Aberdeen University have chosen as their Rector Sir Arthur Keith, whose name is one of the most brilliant on the list of medical graduates of the University. It has not, I believe, happened before that two graduates of Aberdeen occupied the distinguished posts of Chancellor (Lord Meston) and Rector (Sir Arthur Keith). They both won their spurs away from Aberdeen; but the University has not lost sight of them.

AN EDUCATIONAL EXPERIMENT AT DUNDEE.

Dundee Education Committee have decided to try an experiment for a year with the unemployed youth of the city. It was found that out of 82 boys wholly unemployed, only 4 were attending evening classes and of 111 girls, only 6. It is now proposed to spend approximately £1000, of which 75 per cent. would be paid by the Ministry of Labour, on providing a course for girls. The subjects for the girls suggested by the director of education include cookery, needlework, English with history and geography, based on the posters of the Empire Marketing Board, writing of letters, calculation of bills, physical exercises with team games, singing, and also lectures on personal hygiene and mothercraft. A corresponding sum is to be spent on the lads' course. Their course would include benchwork, measuring and weighing, and occasional lectures on physiology and personal hygiene in place of the domestic subjects in the girls' course. These institutes will enable the Health Committee to keep touch with an important section of the young community.

HYGIENE UNDER OTHER NAMES.

The medical mind is so occupied in blazing new trails in preventive medicine that some already in use are apt to be forgotten. Mr. Gilzean, convener of the general purposes committee of Edinburgh town council, says that in Edinburgh the attendances at the baths last year were 750,000, the total including 75,000 school-children who were admitted at a nominal charge. In the poorer quarters of the city the public wash-houses were used last year by 640,000; the income was £17,000, and the expenditure £22,000. For recreation, there were 58 parks, 35 playgrounds, 79 football pitches, 4 rugby pitches, 6 hockey pitches, 8 cricket pitches, 9 golf-courses, 35 bowling-greens, 80 tennis-courts, 11 putting-greens, 3 quoiting-courses. The gross expenditure on parks was £74,000. The income from various sources amounted to £19,000, leaving a charge on the rates of practically £1000 a week. He thought that this expenditure was justified up to the hilt. Last year in connexion with organised games under the direction of the public parks committee over a million persons took part.

These facts, though not directly medical, indicate how the concept of health preservation has infected the whole community. No doubt other cities can show equivalent figures, but it is worth putting these on record since an active layman has taken the trouble to procure them. No one can trace the effect of these activities in any death-rate; but that only means that the death-rate is a very imperfect measure of the progress of preventive medicine.

CLINICS FOR THE BLIND.

The standard of certification of the blind varies widely in different places, and in order to secure more uniformity the Department of Health recommends that local authorities should arrange for the establishment of clinics on a regional basis, as in the parallel case of hospital services, on the Glasgow model. The Department considers that, in addition to the Glasgow clinic, there should be four regional clinics at Edinburgh, Dundee, Aberdeen, and Inverness. With a view to securing uniformity, the Department proposes to convene a meeting of ophthalmic specialists as soon as these surgeons have been appointed to the clinics. On April 1st of this year there were 8897 blind persons in Scotland, or one to 549 of the population. In the case of blind persons between 50 and 70 years of age, the corresponding proportion was 1 to 1183. In areas where the incidence

of blindness generally, or the incidence in the 50–70 years age-group, is above the ratio for Scotland as a whole, it may be desirable to re-examine all the registered blind, or at least the doubtful cases. In these matters the services of a properly organised regional clinic would prove indispensable.

SCOTTISH CRIME.

There seems to be a steady decrease in the number of persons proceeded against in the Scottish criminal courts. In 1929 the number dealt with for cruel and unnatural treatment of children fell to 193, compared with 617 in 1914. The number proceeded against for drunkenness and breach of the peace was the lowest since 1918. The general decrease was seen mainly in crimes against property without violence and in miscellaneous offences. Only one person was sentenced to death in the year, and he was reprieved; on the other hand those sentenced to penal servitude numbered 51, the highest number since 1922. The number of persons dealt with under the Probation of Offenders Act, 1907, has again increased, and stands at 3918 in 1929, which is the highest since 1917. This is held as affording some ground for satisfaction.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

GALWAY BOARD OF HEALTH.

THE expected result has followed on the recent inquiry made by the Department of Local Government and Public Health into the working of the County Galway Board of Health. The Minister has, by sealed order, dissolved the Board of Health, and transferred its powers and duties to a commissioner appointed for the purpose. In the letter announcing this decision the Minister states that for some considerable time he had grave doubts of the capacity and efficiency of the Board. He gives several examples of this lack of efficiency. The Board had failed, in spite of repeated representations, to provide suitable hospital accommodation in Clifden and Ballinesloe. Some months ago the Board committed itself to a policy of abrogating its authority as regards disciplinary questions concerning dispensary medical officers. More recently it had opposed the policy of reorganisation of public health services consequent on Acts of the Legislature. In particular it had obstructed the carrying out of the functions of the county medical officer, by refusing to appoint an assistant medical officer and two public health nurses. As a result the county tuberculosis scheme had partially fallen into abeyance in the past few months, with most unsatisfactory consequences to patients who had been under treatment. In view of the attitude of persistent inertia adopted by the Galway Board of Health, the Minister had little option as to his action. Moreover, experience of administration by paid commissioners in all areas in the Irish Free State where it has been tried has proved uniformly successful. The most notable example is the city of Dublin. Under commissioner rule there the social services were widely extended, and many overdue reforms carried out, while at the same time the rates were reduced by about 25 per cent.

DAMAGES AGAINST A COUNTY MEDICAL OFFICER OF HEALTH.

An unusual claim was made against Dr. Maguire, county medical officer of health, before County Court Judge Moonan at Roscommon last week. Two members of a family named Campbell claimed damages amounting to £200 against the county board of health and the medical officer for the destruction of clothes and other property. It was given in evidence that one occupant of the house had died of typhus fever, and another, suffering from the same disease, had been removed to hospital. The medical officer of health proposed to remove certain clothes and other articles for disinfection. A third member of the family, Patrick Campbell, appealed to the medical officer not to remove the clothes for disinfection, as such a proceeding would cause unnecessary publicity, and would injure the family business; he asked that the infected articles should be burned. He went so far as to give the medical officer an indemnity against any claim if he should agree to burn the articles. This course was adopted. The plaintiffs maintained that Patrick Campbell had no authority from them to authorise the destruction of their property. For the defence it was urged that Dr. Maguire was merely carrying out his statutory duties, and that he believed that Patrick Campbell had full power to act for the family. The judge dismissed the case against the Board of Health, but gave decrees for £90 and £75 respectively against Dr. Maguire, expressing the hope that the Board would not allow their medical officer to be at any personal loss.

APPOINTMENTS IN DUBLIN HOSPITALS.

Mr. James Owens has been appointed surgeon to Mercer's Hospital, in succession to the late Mr. R. C. B. Maunsell. Dr. L. Abrahamson and Dr. James O'Connor have been appointed honorary physicians to the House of Industry Hospitals, in succession to Dr. J. F. O'Carroll and Dr. G. E. Nesbitt, resigned.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments are announced: Surg. Comdr. J. F. Ainley to *Victory*, for R.N. Hospital, Haslar; Surg. Lt. Comdrs. R. W. Higgins to *Ganges* and A. A. Pomfret to *President*, for three months' post-graduate course; and Surg. Lt. R. C. May to *Harebell*.

ROYAL ARMY MEDICAL CORPS.

Maj. R. H. Lucas retires, receiving a gratuity.
Maj. P. S. Stewart retires on retd. pay.
Lt. D. A'Brook resigns his commn.
Lt. (on prob.) T. M. Corcoran, from the secd. list, is restd. to the estabt.

ARMY DENTAL CORPS.

Capts. J. McL. Foreman and J. Wren to be Majs.
Lt. A. Brazenor to be Capt.

ARMY RESERVE OF OFFICERS.

Maj. J. B. Meldon, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.
Capt. J. A. G. Burton, from Supp. Res. of Off., to be Capt.

TERRITORIAL ARMY.

Maj. H. G. Wimbush (late M.G.C.) to be Lt., and relinquishes the rank of Maj.
Capt. G. E. Lloyd to be Maj.
Lt. H. B. Stallard resigns his commn.
J. E. Crooks to be Lt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Maj. O. Teichman, having attained the age limit, retires and retains his rank, with permission to wear the prescribed uniform.

ROYAL AIR FORCE.

The undermentioned Flight Lts. are transferred to the Reserve, Class D (ii): M. Clancy and C. P. O'Toole.

INDIAN MEDICAL SERVICE.

Lt.-Col. H. R. Dutton retires.

PUBLIC HEALTH SERVICES

THE TREATMENT OF VENEREAL DISEASES AMONGST SEAMEN.

By A. O. Ross, M.D., D.P.H.,
MEDICAL OFFICER, SEAMEN'S DISPENSARY, LIVERPOOL.

DURING the past few years the control of venereal disease among seamen has given rise to much discussion, culminating in the resolutions which were adopted by the second conference on the Health and Welfare of Merchant Seamen held at Geneva in October, 1929. These resolutions call upon the League of Nations to evolve a system whereby treatment of venereal disease in seamen shall be regularly carried out, both at sea when a surgeon is carried and at clinics on shore. The main reason for the necessity of treatment at sea is the economic one that a seaman earns his pay by going to sea and rapidly becomes destitute should he remain ashore.

From six years' experience as a whole-time medical officer in charge of a venereal diseases clinic dealing with seamen of all nations, and whose attendances number over 50,000 annually, I propose to give the outline of a plan for treatment, based on actual contact with the problem.

Gonorrhœa.

Acute gonorrhœa up to six weeks can be treated as efficiently at sea as on shore by means of urethro-vesical lavage, provided the lavage solution is kept weak and that the temperature is within the limits of 100° to 110° F. The installation of a common irrigator in ships demands that one person is made responsible for the sterilisation of the nozzle and for the cleanliness of the reservoir and tubing. Oxycyanide of mercury is the irrigating solution of choice in a dilution of 1/12000 to 1/8000 because of its cleanliness. In conjunction with euflavine gr. ½ by mouth 3 times a day it has been used as the routine lavage solution in this clinic for four years, and in the majority of cases the urine is rendered clear within one week. This compares favourably with other lavage solutions which commonly take at least twice as long to achieve that result. The use of the small hand syringe should never be permitted as there is abundant evidence to prove that this instrument is responsible for the bugbear of chronic anterior folliculitis.

The later stages of gonorrhœa are best dealt with by the shore specialist, and the necessary time can usually be spared by the seaman between trips. The danger of issuing irrigators to ships is that the men will imagine that they are cured and will not report at the shore clinic. Some men therefore who would have attended till cure was completed at a shore clinic may by reason of this false sense of security become potential dangers to the uninfected community.

In ships carrying surgeons there is rarely any reason for the man infected with gonorrhœa to stay ashore even in the chronic stage, provided the ship's surgeon makes use of the medical officer of a clinic as a consultant and bacteriologist combined. In this connexion it is well to remember that gonorrhœa and syphilis frequently coexist, the syphilis being latent in about 5 per cent. of cases. The need for the serological examination of the patient's blood early in the disease and again four months later should never be forgotten. Again, it might be well for all supposedly cured gonorrhœa cases to be referred to a shore clinic at the end of each voyage. In this way, two heads being better than one, the number of potential carriers of the gonococcus could be reduced.

Form V44 should be carried in the medical stores and used when referring any patient to a clinic, or transferring a patient to another ship or to hospital for in-patient treatment.

Syphilis.

In ships without surgeons a penile ulcer should be treated with a solution of normal saline (as described in the Ship Captain's Guide) and the advice of a competent medical officer sought as soon as port is entered. Secondary and tertiary syphilis can be treated orally, but here again the danger is that disappearance of symptoms may lead the untutored to imagine that the disease has been cured. The captain might make it his duty to report all cases of venereal disease occurring on the voyage to the inspector of the port sanitary authority on arrival at the home port. The inspector could then interview the men individually and tactfully urge them to attend at the shore clinic.

In ships with surgeons the treatment of syphilis (diagnosis confirmed if possible by micro-examination and serological tests) depends upon the capability of the surgeon. In all cases intramuscular administration of bismuth should be possible, but the provision of any form of arsenobenzol is of doubtful value. If a surgeon is not skilled in intravenous therapy it is unlikely that he is acquainted with the early signs of arsenobenzol intolerance, and thus to issue sulfarsenobenzol might result in serious trouble in patients with idiosyncrasy to arsenobenzene preparations, though at first sight the provision of sulfarsenobenzol for intramuscular use seems to present an easy way out of the difficulty. Where the ship surgeon is trained in the administration of this preparation a supply should be carried and used according to one of the well-defined courses of treatment in use on shore. Each dose of arsenobenzol and bismuth should be entered in the patient's V44 which should be given to him on paying-off, or on change of surgeon.

Our larger shipping companies have it in their power to demand that any surgeon entering the service of the company shall hold a certificate of proficiency from a clinic of standing—i.e., a clinic which has at least 500 fresh cases of venereal disease per annum—vide Ministry of Health Statutory Rules and Orders, 1930, No. 69—and eventually the ships will become staffed with surgeons who are capable of treating any case of syphilis in the ship's company.

There remain for consideration the men who come ashore for treatment for syphilis—i.e., from ships where bismuth alone has been administered or where no surgeon is carried. These men certainly want to spend as little time as possible on shore, and thus intensive treatment is indicated. I have been using the method originally used by Parnell and Fildes in the Royal Naval Hospital at Haslar in 1917–19. In addition to the purely N.A.B. course of 4·2 g. I have added intramuscular bismuth and simultaneously have increased the N.A.B. to 5·7 g., although I believe that 4·2 g. of N.A.B. give results just as good. A scheme is here given.

Day.		Grammes N.A.B.	Grammes Bi.
1	..	0·45 + 0·6 g. sodium thiosulphate	0·30
4	..	0·6 + ,, ,, ,,	,,
8	..	*0·45 + ,, ,, ,,	,,
11	..	*0·6 + ,, ,, ,,	,,
15	..	0·45 + ,, ,, ,,	,,
18	..	0·6 + ,, ,, ,,	,,
22	..	0·45 + ,, ,, ,,	,,
25	..	0·6 + ,, ,, ,,	,,
Short course			
29	..	Nil.	
32	..	0·75 + ,, ,, ,,	,,
36	..	Nil.	
39	..	0·75 + ,, ,, ,,	,,

* After the third and fourth doses, symptoms of intolerance are to be especially looked for, and before administering the dose the Abelin reaction should be performed.

There are two great advantages in this scheme which in therapeutic effect is at least equal to any other course.

1. The time spent ashore is 25–39 days.
2. The result of this course on the types of syphilis

as expressed in terms of the Wassermann reaction and its relapse time are here tabulated, and it will be noted that one can give a very definite prognosis that in the earlier cases of syphilis (A. B. C. types) the Wassermann relapse, should it occur, will not appear till after the six months, and thus in times of financial stringency a man can go to sea for six months before returning for a second course.

—	W.R. before treatment.	Duration of treatment.	% Neg. at 3 mths.	W.R. relapse.
A. Sero-neg. primary .	—	25–39 days.	100	1 year at least
B. Sero-pos.	++	..	100	9 mths. ,,
C. ,, ,, secondary	++	..	95	6 ,, ,,
D. ,, ,, late ..	++	..	70	Indefinite.

It is essential that this course be followed sedulously and not modified. Any irregularity in dates nullifies the prognosis. Similar courses should be given every three to six months until a minimum of 30 intravenous injections has been given.

Commentary.

The routine treatment of acute gonorrhœa can be accomplished at sea in all ships if irrigation apparatus and intelligent supervision are provided. The treatment of chronic gonorrhœa in ships carrying surgeons can be continued at sea provided advantage is taken of the advisory and bacteriological services of shore clinics. The complete treatment for syphilis can be given at sea provided that ships' surgeons are trained in giving intravenous novarsenobenzene and a full record is kept of the case on Form V44 which should remain in the possession of the patient. Intramuscular bismuth can be given by surgeons otherwise unskilled in the treatment of syphilis, and at the end of the voyage the patient should be transferred for novarsenobenzol treatment to a shore clinic (V44 being issued).

In ships without surgeons the instructions given in the "Ship Captain's Medical Guide" should be followed and advantage taken of the advice of shore clinics (which can be obtained through the port sanitary inspectors) until a home port is reached and the ship's company is paid off. The captain or ship's surgeon should never give the patient reason to believe that he is cured, without clinical and bacteriological proof.

Shore clinics may help by offering seamen intensive treatment for a period of four to six weeks every three to six months until the minimum of 30 intravenous novarsenobenzol injections has been given.

I have to thank Dr. A. A. Mussen, Medical Officer of Health, City and Port of Liverpool, for permission to publish this article.

MENTAL HOSPITAL REPORTS.

The SOUTH YORKSHIRE MENTAL HOSPITAL at WADSLEY, near SHEFFIELD, had 1912 patients on the books on Dec. 31st last. There was a recovery-rate of 37·6 per cent. and a death-rate of 10·5 per cent. Autopsies were held on 91·9 per cent. of the fatal cases. Many of those discharged recovered were sent out first on a trial period with money grants. New open-air dormitories became available during the year, but the institution is still crowded in the day-time. There were four cases of typhoid, two of diphtheria, three of erysipelas, one of dysentery, and one of scarlet fever, and an epidemic of influenza with some pneumonia. Thirty-two cases of tuberculosis are under care. The visiting surgeon saw a number of patients and performed several operations. The X ray department is now in full use, and a new sanatorium for cases of tuberculosis and dysentery is being built. During the year 24 men had parole within the grounds and another ten outside it. The out-patient clinics at the Sheffield general hospitals recorded 125 new cases and 22 after-care cases at the Royal Infirmary and a total of 105 cases at the Royal Hospital. The laboratory carried out a large number of routine investigations, including a systematic search for typhoid carriers and a routine Widal test on all new admissions. The Meinicke reaction is also tested on all new cases. General paralytics are treated by induced malaria; of the 21 inoculated during the year five have been discharged and five have improved but are not fit for discharge. Three cases are under treatment by sulphosin. There are 44 post-encephalitics, nine new cases having been admitted during the year. In the ultra-violet light department 39 cases were treated, including a number of skin diseases. The visiting dentist now attends weekly and saw 442 patients last year in the new surgery. During the year 11 attendants and nine nurses obtained their R.M.P.A. certificate, bringing the total to 63 attendants and 32 nurses certificated.

The ROXBURGH DISTRICT BOARD OF CONTROL had 384 patients resident in its institution on May 15th last, an increase on the preceding year. In about one-third of the admissions there was no hope of recovery, yet there was a recovery-rate of 34 per cent. The death-rate was 7·2 per cent. and 11 post-mortem examinations were made. The general health was good and there were no epidemics. A dental surgeon has visited regularly and seen all new cases. Occupational therapy has been commenced and 116 men and 89 women have been in regular employment. There are, however, a large number of senile cases and 61 defectives.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED NOV. 15TH, 1930.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 107 (last week 92); scarlet fever, 2377; diphtheria, 1491; enteric fever, 45; pneumonia, 831; puerperal fever, 50; puerperal pyrexia, 128; cerebro-spinal fever, 8; acute poliomyelitis, 10; acute polio-encephalitis, 1; encephalitis lethargica, 11; dysentery, 7; ophthalmia neonatorum, 98. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Nov. 18th–19th was as follows:—Small-pox, 186 under treatment, 1 under observation (last week 161 and 6 respectively); scarlet fever, 1923; diphtheria, 2207; enteric fever, 15; measles, 85; whooping-cough, 109; puerperal fever, 21 (plus 6 babies); encephalitis lethargica, 121; poliomyelitis, 1; "other diseases," 35. At St. Margaret's Hospital there were 13 babies (plus 5 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 2 (0) from enteric fever, 23 (0) from measles, 4 (0) from scarlet fever, 13 (0) from whooping-cough, 39 (9) from diphtheria, 55 (17) from diarrhœa and enteritis under two years, and 25 (5) from influenza. The figures in parentheses are those for London itself, against which it may be noted that there was no single death during the week from either small-pox, enteric fever, measles, scarlet fever, or whooping-cough.

The fatal cases of enteric fever outside London were reported from Wigan and Sheffield. Measles accounted for 6 deaths at Hull, 4 at Bristol, 2 each at Birmingham and Newcastle-on-Tyne. Leeds reported 2 deaths from whooping-cough. Three fatal cases of diphtheria were reported at Liverpool and at Leeds. Diarrhœa accounted for 6 deaths at Liverpool, 5 at Sheffield, and 3 at Birmingham.

The number of stillbirths notified during the week was 279 (corresponding to a rate of 42 per 1000 births), including 55 in London.

CORRESPONDENCE

PREVENTION OF SCARLET FEVER IN SCHOOLS.

To the Editor of THE LANCET.

SIR,—The paper by Dr. J. A. Glover and Dr. F. Griffiths which appeared in your journal on Oct. 11th, under the title An Outbreak of Scarlet Fever at a Preparatory School, will lead some to believe that very little can be done to check an outbreak of scarlet fever in a school. The authors are medical officers from the Ministry of Health and it will be assumed that they speak with knowledge and authority. It is to correct this impression of our helplessness in face of an outbreak of scarlet fever in a school that I venture on writing this note.

What do the authors say? Shortly, it is this. In a modern school house near the sea, with about 50 boys, ages varying from 8–14 years, scarlet fever breaks out, seven cases occurring between Nov. 12th and 21st; each patient is promptly removed to hospital. No more cases occur for more than two months, but about ten days after the reassembly of the school after Christmas four more cases are found in rapid succession. The school authorities then seek the advice of the Ministry of Health, especially on the question of preventing further spread of the disease. The authors did not advise immunity methods, and for the following reasons: the production of passive immunity by injection of scarlet fever antitoxin is not recommended on the ground that this immunity is too evanescent for use in a boarding-school and because the injected persons become sensitised to horse serum. (This last is of little practical significance for subsequent serum administration.) Active immunity by the Dick method, they say, takes too long and is too uncertain. The small experience of this method in English schools has not been encouraging (it would be interesting to know what their record of this is), though for the use of a hospital staff it may be very valuable.

Instead they undertook an elaborate bacteriological investigation, swabbing on three separate occasions increasing numbers of boys and staff (i.e., Jan. 31st, 19 boys; March 14th, all the boys remaining at school and certain of the staff; May 21st, all the boys and all the staff), and found on each occasion a number of carriers. Profuse carriers were isolated.

In spite of this the epidemic continued on its course unabated. Eighteen more cases occurred in the Lent term, and four cases in the summer term; in all 33 boys contracted scarlet fever out of about 50, so that we can take it that the disease exhausted all the available susceptible material, the remainder becoming immunised. The practical result of the authors' advice to this school as regards stopping the epidemic was thus insignificant; theoretically this investigation has a scientific interest, as it illustrates by bacteriological methods modes of spread of scarlet fever of which we were aware previously only clinically.

Now let us see what the Dicks themselves say about preventing an outbreak of scarlet fever at school. I quote from Schamberg and Kolmer's "Acute Infectious Disease," 1928:

> The Dicks have recently (*North-west Med.*, 1926, xxv., 200) stated "that the skin test for susceptibility to scarlet fever used in connexion with preventive immunisation with the toxin and the prophylactic administration of antitoxin, makes possible the control of scarlet fever epidemics. In an institution where adequate facilities for throat and nose cultures are available it is possible to get the *epidemic under control within 48 hours.*"

They then proceed to describe the procedure which is exactly similar to the one recommended for controlling a diphtheria outbreak.

I had some personal experience with this method, but applied without the bacteriological investigation at a girls' day school in 1928; this was a good class high school and preparatory school of 250 girls in Salford (ages 5–17 years). Fifteen cases had occurred in the autumn term, and the usual methods of disinfection, isolation, inspection of milk, &c., were undertaken without checking the disease. At the end of January I was approached and Dick-tested 135 girls—their parents having given consent—and found 86 of them susceptible to scarlet fever; 78 of these were inoculated (the other eight refused to go on) at weekly intervals with 500, 2000, and 8000 skin test doses of scarlet fever prophylactic, the more strongly marked reactors getting 250, 1000, and 5000 S.T.D. Of these girls, 73 were retested three weeks later after the third dose and 47 were found to have become negative; 26 still gave positive reactions, but these were considerably fainter. Eighteen of these were given a fourth inoculation. In the Lent term there were only two more cases of scarlet fever in the school, in the group which was not tested. In this school just over half the girls were tested; this work was undertaken, as it happened, at the time of the Australian accidents with diphtheria prophylactic, and I had to address the parents on the day the news was in the daily papers. I have no doubt that with more efficient canvassing the proportion of consents could be increased. But even so, although of course there were probably a number of susceptibles left in the 114 girls who were not tested, the proportion of immunes in this group would in all probability be higher than in the group tested, for the reason that most of the girls who had had scarlet fever previously would fall into this group (the girls who had scarlet fever in the previous term were in this group). We can take it then that the majority of susceptibles were rendered immune and that the whole school population (herd) became much more resistant to the spread of the infection, so that if a certain equilibrium had been reached—i.e., cases occurring at intervals—the disease thus spreading slowly, the raising of the resistance of the school herd would tend to upset these conditions in the direction of checking the spread of the disease. It is thus not so important as may appear at first sight to immunise everybody in a population for the purpose of checking an outbreak of a disease, as it is to immunise even a part of it. The larger the proportion of the whole it is, of course, the better will be the result.

I am, Sir, yours faithfully,

D. EDGE,
Medical Superintendent, Ladywell Sanatorium (Infectious Diseases), Salford.

Nov. 24th, 1930.

A SOCIETY OF PHYSICAL MEDICINE.

To the Editor of THE LANCET.

SIR,—The statement on p. 1147 of your last issue that "on Nov. 14th, a society was formed, but its proposed policy did not satisfy a considerable group of those affected" does not convey the correct facts. As the Society constituted on Nov. 14th made no statement of policy, there could be no question of its policy not satisfying any group. Both at the publicly advertised meeting on Nov. 14th (which was

attended by about 40 representatives of every branch of physical medicine), and at the previous meeting on Oct. 24th, when the resolution to form a Society of Physical Medicine was first taken, the question of the Royal Society of Medicine was fully discussed. It was agreed at both meetings by the large majority that to establish an independent and individual society was the only satisfactory and practical course. This policy is, perhaps, not in agreement with the wishes of those general physicians who have little more than an academic interest in physical medicine, but it *is* the policy favoured by the great majority of the younger and active physiotherapists in whose hands lies the future of this important branch of medicine. It is, therefore, the policy that must prevail.

I am, Sir, yours faithfully,

R. KING BROWN,
Acting Hon. Secretary, the British Society of Physical Medicine.

Nov 21st, 1930.

VALUE OF RAMISECTION IN CASES OF SPASTIC WEAKNESS.

To the Editor of THE LANCET.

SIR,—The report on Ramisection in THE LANCET of July 19th, under the authorship of a number of distinguished medical men, is so full of inaccuracies that a reply is demanded.

In the first place the authors have not worried about accurate references and have attributed the operation of ramisection to J. I. Hunter and N. D. Royle. This is incorrect. I published my first paper on Jan. 26th, 1924, on A New Operative Treatment of Spastic Paralysis and its Experimental Basis. Hunter's contribution to the experimental side of this work was not made until nine months after the operation had been performed on the human subject. His paper, The Significance of of the Double Innervation of Voluntary Muscle Illustrated by Reference to the Maintenance of the Posture of the Wing, was published on June 14th, 1924. These are the original references and are found in the *Medical Journal of Australia*.

Next let me deal with adverse reports. The operations of sympathetic ramisection are difficult and require special knowledge of the sympathetic nervous system. This is possessed by few and the results of the trial operations are necessarily disappointing if the correct tissues are not divided. Bankart, for example, has reported in the *Journal of the Royal Society of Medicine* the results of ramisection in which he failed in a number of cases to get even vaso-motor changes. The explanation is obvious.

The next point is that I chose the worst patients for operation and in this remark I am supported by my friend Dr. Gordon Pugh of Queen Mary's Hospital, Carshalton, where my operations were performed. Now let me deal with the patients.

Case 1 of the report.—This patient had had encephalitis lethargica and exhibited the sequelæ including athetosis. The latter is not mentioned in the report. On this patient I performed my 2nd operation of sympathetic ramisection and this I have discovered since is not a suitable procedure for athetosis. I recently (Oct. 6th, 1928) introduced a new operation, thoracic sympathetic trunk section, by which all the sympathetic fibres going to the upper limb are divided in addition to having effects in the cerebrum.

Case 2.—This patient had had encephalitis lethargica and fell backwards when she attempted to walk. The operation of "double lumbar ramisectomy" is described as producing no improvement, yet she was walking according to the case records on Feb. 25th, 1928, and further could walk comfortably sometimes. She retrogressed subsequently on account of the progressive cerebral sclerosis associated with encephalitis, but that does not justify the statement that no improvement appeared.

Case 3.—This patient was a boy with left spastic hemiplegia of which the onset was sudden. Flaccid paralysis followed after a restless night and developed into spastic paralysis. The patient could not run. He could not use his hand and his thumb was tightly flexed in his palm. The day following the operation (May 11th, 1927) this patient could control voluntarily his fingers and thumb and could supinate eight days later. Yet the results are attributed to re-education. He was able to run in July, 1927. On Feb. 7th, 1928, Mr. Trethowan said, according to case-history, that the hand was very good. Such results in re-education of spastic paralysis have never been obtained in any of the clinics I have visited in various parts of the world.

Case 4.—This patient had severe spastic paraplegia with loss of voluntary control of his lower limbs. He had previously had obturator neurectomy and adductor tenotomy performed by Mr. Elmslie without results so was, apparently, not a good subject for a trial operation. Ramisection produced immediate improvement in range of movement and alteration in reflexes while I was in Carshalton, but these are not mentioned in the report.

Case 5.—This patient was seen by Mr. Trethowan who said he presented "a not very bad case of spastic quadriplegia, able to walk with a little help." The important point is that the patient was unable to walk before operation and walked unaided three weeks after ramisection. The report goes on to say "there is no evidence to show that bilateral lumbar ramisection in this case produced any result, such improvement as was ultimately seen being accounted for by the lengthening of the tendo Achillis on both sides which was subsequently performed." When I saw this patient in October, 1930, I found that the lengthening of the tendo Achillis had led to a severe double talipes calcaneo-valgus. The patient has thus lost the support of the calf muscles, cannot raise his heels off the ground, and had consequently re-lost his balance. The necessity for lengthening the tendo Achillis in this patient was disputed by the signatories when I said it should be done. Now it as been done with what the committee calls "improvement" but what I would classify as a calamity. The patient now uses hip and knee muscles well but the support at the heel is lacking.

Case 6.—I saw this patient also. She had athetosis and as such was not suitable for my old operation of sympathetic ramisection. In spite of that she has improved even with regard to opening her hand.

Finally, the opinion is expressed in the report that "the diminution of tone was no more than may be seen after *any* major surgical procedure with post-operative shock." I simply ask the signatories which operation in the lumbar region produces a diminution of tone in the lower limbs and for what length of time. My first patient exhibits changes in tone in the limb on side of operation seven years after operation. Surely the committee does not infer that he still has surgical shock?

Very sweeping conclusions are drawn from six cases. Surely it would be more advantageous for the committee to defer judgment until they had examined a greater number of patients. I have seen the results of approximately 600 operations and I would refer any honest seeker after truth to my paper in a recent number of the *British Medical Journal* on the results of ramisection as experienced by my patients.

I am, Sir, yours faithfully,

N. D. ROYLE.

Nov. 15th, 1930.

DENTAL CARIES AND DIET.

To the Editor of THE LANCET.

SIR,—It seems to me that undue hopes with regard to a certain method of preventing dental caries may be aroused by your leading article of last week. About a decade ago, the theory of a vitamin-C deficiency as the cause of caries was taken up with extraordinary enthusiasm in America, but under the fire of criticism during the last two or three years this theory has, I think, been largely disposed of, and probably accounts for the change over to the vitamin-D theory. In this country we have been rather regaled with investigations and inferences, firstly on fat-soluble A and later on vitamin D, in attempts to explain the prevalence of caries. But here again neither of these theories has stood up to the fire of criticism. Further, they have been tried in a very practical way, but what do we find? According to the *Dental Surgeon* (April 5th, 1930) "we are already meeting with cases where children are devastated with caries, who have been dieted with cod-liver oil, and where the fond and anxious parents have pinned their faith to this food—in vain."

That a diabetic diet—in which sugar and carbohydrates generally are reduced to a minimum—will correspondingly reduce the incidence of caries, is recognised by those of us who hold that sugar lodging about the crevices and retention areas of the teeth is the principal cause of dental caries, and the accuracy of this view no doubt accounts for the good results recorded among children on the diabetic diet, especially when this contains meat, fruit, and vegetables. Apart from statistical investigations and the clinical evidence which shows this theory to be true, recent investigation [1] by Prof. R. W. Bunting and his collaborators shows that when the amount of sugar is reduced in children's diet *B. acidophilus* tends to disappear and dental caries correspondingly becomes arrested.—I am, Sir, yours faithfully,

Harley-street, W., Nov. 23rd, 1930. J. SIM WALLACE.

DIAGNOSIS OF PULMONARY TUBERCLE.

To the Editor of THE LANCET.

SIR,—In his Mitchell lecture, reported in your issue of Nov. 22nd, Dr. Burrell gives a welcome survey of the difficulties inherent in the diagnosis and management of early cases of pulmonary tuberculosis, and affords a very present help and encouragement to some of us who, labouring in the wide spaces of general medicine, may sometimes find it hard to maintain the confidence in our opinions which is essential to a successful issue when grappling with this particular problem. In this connexion it may be of interest to mention two or three points which have been impressed upon me during the years of practice.

Whereas, for the most part, the clinical picture presented by persons who have suffered from hæmoptysis, other than that of tuberculous origin, is sufficiently characteristic to render mistaken diagnosis unlikely, in my experience one of the most tricky and misleading conditions is the early morning hæmoptysis resulting from gingivitis, which is not seldom diagnosed as being due to early tuberculosis, more frequently perhaps than is hæmoptysis from any other non-tuberculous lesion. It seems that the very simplicity of the condition is the reason that it is overlooked; the consequences of a mistake so glaring are correspondingly grave.

An interesting point made by Dr. Burrell is that physical signs are very occasionally the first indication of disease. It is difficult to account for the absence of all symptoms in these cases which are of importance because unexpected and because, as Dr. Burrell says, it is becoming the custom in some schools to belittle the value of physical signs. Some time ago, during examination for life insurance of a young man whom I had known for some years, I came upon a crop of persistent moist sounds over a patch of lung internal to the angle of the left scapula. There were no other signs of disease, and the patient looked and felt perfectly well. A postponement of the insurance was followed by a X ray examination which confirmed the suspected diagnosis of tuberculosis, and subsequently cough developed with tubercle bacilli in the sputum. Eventually he made a good recovery and is now an apparently healthy married man.—I am, Sir, yours faithfully,

Torquay, Nov. 22nd, 1930. A. E. CARVER.

[1] Dental Cosmos, October, 1928, and April, 1930.

THE CHARTERHOUSE RHEUMATISM CLINIC

To the Editor of THE LANCET.

SIR,—All those working on the rheumatic problem will be interested in the figures published in your last issue (p. 1151), but I suggest that they would be still more interested if the Charterhouse Clinic would produce similar figures which could be analysed by ordinary statistical methods. In the first table, the types treated are too diversified to enable any definite conclusions to be made from the figures given, as they include types of rheumatic disease not generally attributed to infection. If a scientific evaluation of vaccine therapy is to be effected, I suggest that the inquiry should be confined to one main group, such as rheumatoid (infective) arthritis, and that the results should be presented in such a manner that they can be examined by the usual mathematical methods. An inquiry such as this has been proceeding at the Devonshire Hospital for several years, on the following lines:

Type of case = Infective arthritis (all cases of subacute rheumatism, fibrositis, osteo-arthritis, &c., rigidly excluded); Total number of cases = 330; Total replying to postcard = 273; Period covered by inquiry = January, 1928 to January 1930; Vaccine = *Streptococcus viridans*; No difference in figures considered significant unless greater than the possible variation due to chance.

In view of the tendency of this type of case to spontaneous exacerbation and remission it is necessary in attempting to estimate the value of treatment, to compare the number of cases improved after treatment with those improving before treatment was commenced, and to obtain similar data in a control series of adequate size. As far as a comparison is possible, the total improved among the patients under treatment at the Charterhouse Clinic is much the same as on discharge here, 92 per cent. as against 91·35 per cent. The total *subsequently* improved in vaccine treated cases was 61 per cent. as compared with 77·4 per cent. at the Charterhouse Clinic. This difference is probably accounted for by the fact that all our cases were of infective arthritis. On admission 48 per cent. of our vaccine-treated patients stated that they were improving. These two figures (48 per cent. and 61 per cent.) may be regarded as strictly comparable, as both (the condition on admission and the reply to the postcard) represent the subjective condition as given by the patient. The difference between these two figures (61% − 48% = 13%) is barely significant when the standard of deviation is considered. When the figure of 13 per cent. is compared with a similar figure in a control series of 550 non-vaccine treated cases, the difference (3 per cent.) is obviously of no significance. I am, Sir, yours faithfully,

PHYLLIS M. CONGDON, M.D., Dipl. Bact.,
Bacteriologist, Devonshire Hospital, Buxton.
Nov. 25th, 1930.

OBITUARY

DAME MARY SCHARLIEB, D.B.E., M.D., M.S. Lond.,

CONSULTING GYNÆCOLOGIST, ROYAL FREE HOSPITAL.

THE critical state of Dame Mary Scharlieb's health has been known to the public as well as to her immediate circle for a long time; her death occurred on Nov. 21st at the residence of her son, Dr. H. J. Shirley.

Mary Dalcomb Scharlieb was born in London in 1845, the daughter of William Candler Bird. The mother survived by only a few days the birth of the infant, who was temporarily confided to the care of her grandmother; for her father, who had just become a member of a firm in Manchester, departed to make a new home there. Mary Bird soon, however, joined him and was educated at boarding schools in Manchester, New Brighton, and finally in London. Her father made a second marriage, and she acted as governess to three small half-sisters, the children of a kind and wise step-mother, until, when she was 20 years old, she met her husband, William Mason Scharlieb, a student at the Bar, who was intending to practise in Madras. Marriage followed quickly on engagement, and in 1865 the young couple left for India.

DAME MARY SCHARLIEB.

[*Photograph by Elliott and Fry.*

Dame Mary in her short and interesting "Reminiscences," describes how, after the birth of her second child, she received the impetus which determined her career. Her husband was editing the *Madras Jurist*, and she assisted him in collating material and writing précis for this journal. In 1871 there came to her notice in his way Fayrer's work on medical jurisprudence, and the description of the suffering of Hindu and Mahometan women in childbirth, under the *purdah* rules, so affected her that she determined to assist as a nurse at the lying-in hospital at Madras. One year of such work sufficed to assure her that a knowledge of midwifery alone would not make her a competent adviser to native women, and she determined to return to England and take advantage of the movement for the medical qualification of women which had been led by Sophia Jex Blake and Elizabeth Garrett Anderson. The commercial bad fortune of her father indirectly led to the achievement of her wishes. Mr. Bird's firm fell on evil days, and William Scharlieb offered hospitality to his wife's father and step-mother and their children. As a consequence, under new family arrangements, Mary Scharlieb became free to pursue her medical studies in Madras. In 1878 she obtained the diploma of L.M.S. and M. from the Madras Medical College, and she was supported by the Madras Government in her intention to graduate in medicine in England. Accordingly she returned to London and joined the London School of Medicine for Women, which had shortly before been affiliated to the Royal Free Hospital. At this period she received much practical help from Prof. (now Sir) Edward Sharpey-Schafer, then assistant professor of physiology at University College; while Florence Nightingale, Sir Henry Acland, and Elizabeth Garrett Anderson gave her warm encouragement.

This was a stirring period in the medical education of women. In 1875 the London School had started with a three years' curriculum—the statutory period of that date, but the medical schools attached to the teaching hospitals refused to admit the women students, and the examining boards would not accept their certificates of attendance. The question whether the Medical Acts were intended to confine the practice of medicine to men having been settled in favour of the broader view, Russell Gurney, M.P. for Southampton and Recorder of London, succeeded in the House of Commons with a short permissive Bill giving medical examining boards the power to admit women to their examinations. In the same year the treasurer of the new school, James Stansfeld, M.P. for Halifax, entered into negotiations with the Royal Free Hospital, to which institution no male students were attached, and the authorities of the hospital were found willing to admit women students to the wards on a guarantee against possible loss of subscriptions. Between 1877 and 1882, the period covered by the original agreement with the Hospital, the School made progress, and while the number of students was still small their quality was high; among Mary Scharlieb's co-students, when she entered were, for example, Helen Prideaux, Annie McCall, and Julia Cock, who later filled the post of Dean. At the intermediate examination in medicine at the University of London, in 1881, the Gold Medal and exhibition in anatomy were awarded to Helen Prideaux, whose tragic death occurred three years later, while Mary Scharlieb in the same year took first-class honours in materia medica and forensic chemistry, following up these successes by obtaining, in the examination for the M.B. degree, the gold medal and exhibition in obstetric medicine, with honours in medicine and forensic medicine.

After a short period of post-graduate work in Vienna, where she attended special courses at the Frauenklinik and under the famous Politzer, Mary Scharlieb returned to London, preparatory to following her original intention of practising in Madras as an obstetric physician. It was now that Queen Victoria received her at the instance of Sir Henry Acland, and commanded from her a plain account of the sufferings caused to Caste and Gosha women by their inability to avail themselves of the services of male doctors. The Queen was deeply affected by the shocking narrative, which later was repeated, at special request, to the Prince of Wales (King Edward VII.). The Royal interest thus manifested in her plans was of great value to Mary Scharlieb when she arrived again in India in 1883. She was immediately made lecturer on her subjects in the Madras Medical College, was appointed to an examinership in the College, and

later became medical superintendent of the Royal Victoria Caste and Gosha Hospital, whose foundation was due to her energies, assisted by Lady Grant-Duff and Surg.-General Furnell. For the next four years she conducted a large medical practice in Madras single-handed, for there was no other woman practitioner available, and no male doctor would have been permitted to assist in her ministrations to Indian women. But by 1887 excessive work had so told on her health that she was obliged to recognise the sense of the medical advice which ordered her to England without delay.

She returned to London and has put it on record that she was received with helpful kindness by many of the leading members of the medical profession aware of her intention of carrying on gynæcological and consulting practice. She was appointed joint lecturer on medical jurisprudence in the School of Medicine for Women, and, although she failed to obtain a place on the staff at Great Ormond-street, she was appointed physician to out-patients at the New Hospital for Women, which, thanks to the energies of Mrs. Garrett Anderson, had developed from a small dispensary into the hospital in the Euston-road which is now known as the Elizabeth Garrett Anderson Hospital. Here she worked for many years with notable success. But she had the resolution also to continue academic study, for she proceeded to the M.D. degree in 1888, while in 1896 she was the first woman to obtain the M.S.

Her Indian work now stood her in good stead, and her operating theatre in the Euston-road hospital was often visited by colleagues who came to see her methods. To their judgment, to some extent, must have been due the next step in her career, for in 1892 Dame Mary was appointed gynæcologist to the Royal Free Hospital, where a vacancy had just occurred. This was the first time that a woman had held any position on the visiting staff of a general hospital, and not only men viewed the appointment with some apprehension. But she disarmed criticism alike by her surgery and her attitude towards all with whom she worked, colleagues in the wards and the nursing staff. In 1902, at the age of 57, she was appointed gynæcological surgeon. In 1905, at the age limit of 60, her services were so valuable to the hospital that she was reappointed for another year. She was again reappointed in October, 1906, and again in 1907. She resigned her post at the end of 1908, when she was appointed consulting gynæcological surgeon to the hospital. When her resignation was accepted, the board gave a full and long expression of their indebtedness for her valuable surgical work and for the services she had rendered so long to the hospital. They mentioned that her relationship with the board and her medical colleagues was the most harmonious possible during her term of office and they expressed their very great regret that she could no longer hold the post. She never lost touch, however, with the hospital, and as President of the London School of Medicine for Women she interested herself very much in the welfare of the staff and the students, keeping up her connexion with those who were entering the medical profession. Perhaps even stronger than her enthusiasm for surgery was that for the due training of medical women.

Her professional work outside the hospital was notable. Before women were admitted to the medical societies she had been an active member of the Association of Registered Medical Women which met at the hospital in Euston-road, and there she frequently spoke and read scientific papers. Later, when t Obstetric Society opened its doors to women, she too part from the first in debates, and with the formati of the Royal Society of Medicine she became a pr minent member of the Obstetric Section. From t start until quite recently she carried on a lar consulting practice, performing major operations, a enjoying the confidence of a large number of sufferi women. She was a member of the Royal Commissi on Venereal Diseases which finally reported in 191 and in the following year she was made C.B.E. 1926 she was made D.B.E.

In the social and philanthropic sides of life Dar Mary Scharlieb had many interests. She was honora treasurer of the Royal Medical Fund Guild, and the Women's League of Service for Motherhood, s was a justice of the peace, doing admirable work the Children's Court, and she supported numero philanthropic institutions. But always she found tir to lead a full private life and many friends have hap memories of her hospitality. Her husband died 1901. She had three children, two sons and daughter, the younger son, Dr. Herbert John Shirle C.M.G., and the daughter entering the medical pr fession. Her elder son, a soldier, who had also earn the distinction of C.M.G., predeceased her abo a year ago, while her daughter, Dr. El Scharlieb, died in 1926. Until the death of h daughter Dame Mary and she had lived in the sa house in Harley-street in which the mother co menced practice; when the house was pulled do she went to live with her son, who by changing h name avoided confusion with his mother. Dr. Shirl during the later years of his mother's practice help her in every way, especially as an anæsthetist in h operation cases and in the after-care of patients. It from Dr. Shirley we learn of the peaceful end, Dame Mary's mind remained perfectly clear and s was free from all acute pain.

Mary Scharlieb leaves behind her fragrant memori An exponent of high endeavour, every action w dictated by the desire to benefit humanity, followi the Christian example as she viewed it. Pity suffering supplied the first impulse; intention give to suffering her best aid encouraged her, as middle-aged woman and the mother of a fami during the tedium of class-rooms; and a who hearted devotion to her science lay behind t strenuous and successful routine of her daily li She took holiday rests in quiet places, using t leisure now and again to publish a book in popu style on subjects related to medicine or on soc affairs with which her experience fitted her to de She wrote a modest autobiography under the title "Reminiscences." And she is said to have confess to two social ambitions—to be presented at Co and possess a diamond necklace; when both wish were attained she confessed "Now I have my t vanities."

Dame Mary Scharlieb was a good citizen, a devot wife and mother, a great surgeon, and a very hum person.

HERBERT SNOW, M.D. Lond.

Dr. Snow, who died on Nov. 20th at St. Leonar on-Sea, was nearly 84 years of age. He was on surgical staff of the Cancer Hospital, Brompt from 1876 to 1905, and published a compendi treatise on cancers and the cancer process. He at that time a keen critic of the theories then vogue, and set out in our own columns sound reas

why cancer could hardly be due to a micro-organism, and why the so-called parasitic protozoa were nothing more than a kind of endogenous cell-formation. Later in his career he promulgated theories of cancer which in their turn were criticised, and the latter part of his life was largely given up to an attempt to demonstrate the futility of physiological research as a means of promoting medical science. From 1908 on he was consulting surgeon to the National Anti-vivisection Hospital at Battersea.

EWAN RICHARDS FRAZER, M.B. Oxf.

Dr. E. R. Frazer, whose death on Nov. 15th was announced in our columns last week, was the son of Mr. John Frazer, of Sydney, and was born in 1867. He entered Balliol College, Oxford, in 1887, intending to study history, but was soon attracted to the study of pathology by his friendship with James Ritchie who was then collaborating with Burdon Sanderson. After taking his B.A. in 1892 he went on to the London Hospital for his clinical work, graduating in medicine at Oxford in 1898, and obtaining the Conjoint diploma in the same year. He visited Copenhagen, studying there under Salomonsen at a time when Dreyer was acting as his first assistant. Frazer was then regarded as a coming man in pathology, and papers on pathological subjects continued to appear from his pen, although his systematic study was interrupted by his return to Australia on the death of his brother. In another way, however, pathology at Oxford owes him a lasting debt, for it was due to his generosity while still an undergraduate that the school of pathology was provided with a department of its own. The donation was made under the following circumstances.

"Seated one night by my fireside," writes Prof. Arthur Thomson, "for he often dropped in to have a smoke and chat with me, Frazer surprised me by saying that he was anxious to do something to help the medical school. I confess, at first, I did not quite see the drift of his remark, until he explained that he had a considerable balance lying to his credit at the bank, and that he did not know what to do with it. At that time the University was sorely in need of money, for in spite of the efforts of Sanderson and Ritchie, the University was without a pathological laboratory, wherein provision could be made for the appropriate teaching of the subject, I set the facts before him, with the result that he handed me a cheque for £5000. Knowing full well the difficulties that had arisen in regard to the establishment of other departments in the early medical school, I suggested the propriety of his putting the money in trust with me and his lawyer, until such time as the University was willing to comply with such conditions as we thought necessary to impose before the University obtained possession of his gift. This was a new departure, but we had previously learned that opposition had been raised to building grants on the grounds that the departments concerned were not in any way to be associated with experiments on animals. In this way the trustees of the benefaction were in a position to arrange terms with the authorities of the University.

"It was not altogether an agreeable business for a comparatively young man, as I was then, to lay down conditions to a Vice-Chancellor, but it was all finally settled in an amicable manner, and Frazer's £5000, supplemented by a contribution from the University, enabled the school to be provided in 1901 with a department, in which the late Prof. Ritchie so successfully carried out the teaching of pathology until the time that we were deprived of his services by his appointment to the chair of bacteriology in Edinburgh. Since then, and until the University profited by the benefaction of the Sir William Dunn trustees in 1926, Prof. Dreyer, appointed Ritchie's successor, continued to occupy the original building, which is now utilised as the up-to-date department of the professor of pharmacology, Dr. J. A. Gunn.

"The incident," Prof. Thomson concludes, "is in my experience unique, and well worthy of being recorded to the memory of the big-hearted undergraduate who recognised in such substantial measure the debt he owed to his alma mater."

Recently Dr. Frazer had lived in comparative retirement at East Grinstead and in London, but not long ago he founded a scholarship to be held at Balliol College by a student of natural science from Winchester College, in memory of his eldest son who was killed while ski-ing in Switzerland. Dr. Frazer was in his sixty-fourth year.

JOHN HAMMOND TEACHER, M.D., F.R.F.P.S. Glasg.

WE have to record that Prof. Teacher died on Nov. 21st at Glasgow, where his life was spent from boyhood. A son of the late William Teacher of that city, he was born in 1869, and was educated at the Academy and at the University. Graduating in arts in 1888 and in medicine four years later, he first held resident posts at the Western Infirmary and then was appointed assistant curator of the museum, left to Glasgow University by William Hunter. In 1899 he published a catalogue of the anatomical and pathological specimens in this collection, and in the same year was appointed assistant to the professor of physiology. In 1903 he received the Bellahouston medal on graduating as M.D., and published his important thesis on chorion epithelioma in the *Journal of Obstetrics of Gynæcology of the British Empire*. He now became assistant to the professor of pathology, and this led on to the lectureship in pathological histology (1908). He joined the staff of St. Mungo's College as professor of pathology in 1909, and succeeded to the St. Mungo (Notman) chair of pathology in the University in 1911. During this period he was also working for the hospitals, first at the Western Infirmary and the Royal Hospital for Sick Children, and from 1909 onwards as pathologist to the Royal Infirmary. His research and interests were varied. Although not an anatomist in the stricter meaning of the term, his name was well known to all anatomists and embryologists. He followed with sustained enthusiasm the drawn-out search for material which could throw light on the conditions and problems of early development; in this he made full use of the opportunities afforded by his work as a pathologist, and was able to call on skilled experts for help in deciphering the results of his labours. In this way he came to be associated with Prof. T. H. Bryce and Dr. Munro Kerr in the establishment of present-day views about the early stages of the embedded ovum as well as on the nature of the embedding itself. Perhaps the most widely known of the products of this collaboration is the famous Bryce-Teacher ovum, which at one time stood as the youngest known stage in human development. This ovum was first brought to public notice some 22 years ago. Its position as the earliest ovum is no longer unchallenged, but the ovum retains and will always

have a great value in descriptive as well as historical embryology. The careful calculations on well-founded data which went with it, moreover, have altered the views generally held about the ages to be assigned to human embryos. For these contributions to our knowledge—and for others less widely known—Teacher's name will be held in remembrance for many a year among anatomists and embryologists.

As a pathologist he saw the whole development of the Glasgow school since Coats first convinced the University that his subject needed and deserved academic recognition. For many years he was one of the solid elements of British pathology, whom everyone respected as a sound and reliable worker and to whom everyone referred for information on his special topics. As long ago as 1894, in collaboration with Coats, he published an account of a monster, and his subsequent interests were largely obstetrical and gynæcological. Apart from his studies on the ovum he will be chiefly remembered for his work on chorion-epithelioma and the symmetrical cortical necrosis of the kidneys associated with pregnancy. More recently he pointed out in his interesting and practical way that post-operative vomiting may leave active gastric juice in the lower end of the œsophagus, leading to ante-mortem digestion and sometimes hæmatemesis. "He had a lot of nervous idealism in his composition," writes a colleague. "It ran out perhaps more in his passion for yachts than in the post-mortem room, but he really cared about pathology and set himself a standard of thoroughness which was wholly admirable."

Prof. Teacher married in 1904 Rachel, daughter of the late J. M. Hutcheson, of Greenock.

GEORGE HUGH KIDD MACALISTER, M.D. Camb., M.R.C.P. Lond., D.P.H.

Dr. Hugh Macalister, who died in London o Nov. 2nd after a long illness, had been Princip of King Edward VII. College of Medicine at Singapo since 1918. Born at Dublin in 1879 he w the younger son of Dr. Alexander Macalister, lat professor of anatomy in the University of Cambridg and the brother of Edith, the wife of Sir Donal MacAlister. Hugh was educated at Charterhouse an St. John's College, Cambridge, continuing his medic course at Guy's Hospital and graduating in 190 He then held resident house appointments at Guy before he became assistant bacteriologist there, an later at the Lister Institute. He went to India i 1914 as pathologist to the Imperial Laborator at Muktesar, and four years later migrated t Singapore, where he was professor of clinical medicin and lecturer on therapeutics, as well as principal o the school. Although well qualified in many branche of medicine and pathology, it is as an administrato that his name will be chiefly remembered, for h planned and raised funds for the new buildings of th Singapore College, which, in his hands, became highly efficient school. He was an active membe of the Pathological Society of Great Britain, and hi papers cover such various ground as dysenter carriers, paroxysmal hæmoglobinuria, and immunisa tion in tuberculosis. For the last two years of th war he was on service in Mesopotamia with the ran of Captain I.M.S. His particular recreation wa climbing. Principal Hugh Macalister marrie Margaret, daughter of William Moir, and leaves hi widow with two young daughters.

MEDICAL NEWS

University of Cambridge.

On. Nov. 14th the degrees of M.B. & B.Chir. were conferred on John Vaughan-Bradley.

Society of Apothecaries of London.

At recent examinations the following candidates were successful :—

Surgery.—E. Jacomb, Charing Cross Hosp. ; L. A. Riddell, Univ. of New Zealand ; and W. K. Schnarr, Guy's Hosp.

Medicine.—R. P. Davies, London Hosp. ; L. A. Riddell, Univ. of New Zealand ; and W. K. Schnarr, Guy's Hosp.

Forensic Medicine, Hygiene and Insanity.—G. W. Hinchliff, St. Mary's Hosp. ; H. G. Hind, St. Bart.'s Hosp. ; W. A. Naidu, London Hosp. ; W. W. Parry, Guy's Hosp. ; L. A. Riddell, Univ. of New Zealand ; L. Sachs, St. Mary's Hosp. ; and S. H. Thaler, Guy's Hosp.

Midwifery.—S. J. Bellgard, St. Mary's Hosp. ; G. I. Benjamin, Univ. of Madras ; C. L. Ferguson, London Hosp. ; W. G. Kingston, Middlesex Hosp. ; E. H. W. Lyle, King's College Hosp. ; M. S. Mules, Royal Free Hosp. ; and H. C. Pain, Univ. of St. Andrews and Middlesex Hosp.

The following candidates, having completed the Final Examination, are granted the diploma of the Society entitling them upon registration (under the Medical Acts) to practise medicine, surgery and midwifery : R. P. Davies and E. H. W. Lyle.

University of Liége.

On Nov. 15th the degree of M.D. *Honoris causa* was conferred on Dr. G. H. F. Nuttall, F.R.S., Quick Professor of Biology in the University of Cambridge.

Australian and New Zealand Medical Association.

The winter dinner of the Australian and New Zealand Medical Association in England will be held at the Trocadero Restaurant, Piccadilly, on Friday, Dec. 12th, at 7.45 P.M. for 8.0 P.M. Mr. T. P. Dunhill will preside, and the High Commissioner for Australia will be the official guest of the association. All medical visitors from Australia and New Zealand, whether members of the association or not, are invited to be present. The address of the secretaries is 26, Queen Anne-street, London, W. 1.

Royal Dental Hospital Dinner.

The annual dinner of the Royal Dental Hospital was hel at the Trocadero Restaurant, London, on Nov. 22nd with Dr. Harvey Hilliard in the chair. About 180 member of the staff, past and present students and visitors wer present. The toast of the Hospital and Dental Schoo was proposed by the Chairman, who emphasised th importance of systemic disease to dental work. He ha become more and more impressed by the extent to whic disease of the mouth had its origin in general disease o dysfunction—especially of the digestive organs—and h pleaded for closer coöperation between doctor and dentist for the benefit of both and of their patient. Even a simpl caries indicated that the patient was not in perfect health and to fill a carious tooth was to treat a symptom and ignore a cause. Their hospital, he said, was the mother o dental hospitals and schools and the home of denta anæsthesia. Referring to the new in-patient department he said that more beds were needed, and that he would lik to see the institution of research beds with a researc physician and of travelling scholarships. Sir William Goschen, responding to the toast, commented on the grea strides made of recent years in hospital administration and nursing. He expressed his profound belief in the voluntary system, and said that one thing that did not change was th love for one's hospital. Mr. Harry Stobie, Dean of the Denta School, also in reply, referred to recent resignations and appointments, and to the resuscitation of the Students Society. The health of the visitors was proposed by Mr. A. T Pitts, who attempted to classify them on a zoological basis but feared that those whom he classed among the edentata might resent the allusion to their personal deficiency Sir John Rose Bradford replied on behalf of the guests, and the health of the Chairman was proposed by Dr. A. W Oxford. After Dr. Hilliard's reply the evening concluded with a muscial programme.

A Hospital Lottery.

It is stated that the Government of New South Wales intends to introduce a lottery for the benefit of the hospitals of the State. It is believed that £500,000 per annum can thus be raised.

AT a Court meeting this month Dr. Hugh Stannus Stannus was sworn as Master of the Worshipful Company of Founders.

A New Roman Catholic Hospital.

The Institute of Trained Nurses of Our Lady of Compassion has acquired 18 houses in Barkham-terrace, Lambeth-road, opposite Bethlem Hospital, upon the site of which it is proposed to erect at a cost of £100,000 a hospital of 100 beds and a training school for nurses.

Cheyne Hospital for Children.

A small private ward is now available at this hospital in Cheyne-walk, Chelsea, S.W., for the reception of children of 3 to 13 years of age requiring a prolonged course of treatment, whose parents, whilst unable to afford a full nursing home fee, are able to pay more than the small maintenance charge for patients in the general wards of the hospital. Private patients eligible for admission include those suffering from osteomyelitis, anterior poliomyelitis, dislocated hip, surgical tuberculosis, certain forms of infantile paralysis, rickets, rheumatoid arthritis, chorea, and heart disease. Children will be admitted by arrangement with, and for treatment by, a member of the hospital medical staff; practitioners not acquainted with members of the staff should apply to the secretary. A weekly charge of from £3 3*s*. to £5 5*s*. will be made by the hospital.

Radon for Midland Hospitals.

The National Radium Commission has lent half a gramme of radium to the University of Birmingham for the production of radon at a rent of £120 a year and £30 a year for insurance. The Faculty of Medicine of the University will establish a rota for radon supplies, beginning in January next, embracing all hospitals recognised by the Faculty as teaching institutions connected with the University; general or special hospitals in the area, not recognised as teaching hospitals, but of a similar type and working on similar lines; and municipal and poor-law institutions. It is suggested that for the first year the charge for the supply of radon should be 1*s*. 6*d*. per millicurie.

Hospital for Sick Children.

The Prince of Wales, as President, has launched an appeal for £500,000 for the reconstruction and re-equipment of the Hospital for Sick Children, Great Ormond-street, London. The new building is to occupy the present site, it having been found impossible to acquire another equally suitable in the neighbourhood. The work will be carried out in instalments as means permit, but there will be no interruption of the hospital's activities. The wards will all face south and have balconies. The main block for patients will be set back 250 ft. from Great Ormond-street, and between it and an out-patients' block there will be a garden. The existing chapel and out-patients' hall will remain, and the staff will be housed in a separate building fronting Guilford-street.

Leeds Maternity Hospital.

Mrs. Stanley Baldwin last week opened extensions of this institution which have cost over £64,000, of which £8000 is still required. Beginning as a nursing home, the hospital is now one of the chief maternity hospitals in the country. In a speech following the opening ceremony, Dr. Arthur Hawkyard, Lord Mayor of Leeds, recalled that Dr. William Hey, who was Mayor of Leeds in 1787 and again in 1802, was in the habit of publicly dissecting the bodies of criminals from Wakefield gaol. Three courses of these anatomical lectures produced £112, which was given to the Leeds Infirmary.

Donations and Bequests.

Mr. Joseph Squiers, of Birmingham, left, among other bequests, £100 each to the Queen's Hospital, Birmingham, the Birmingham Skin and Lock Hospital, the Birmingham Ear and Throat Hospital, the Birmingham Eye Hospital, the General Hospital, Birmingham, the Birmingham General Dispensary, and the Royal Institute for the Blind, Edgbaston. After the death of his wife, the Birmingham Hospital for Nervous Diseases, the Royal Cripples Hospital, Birmingham, and the Children's Hospital, Birmingham, will each receive £1250 to endow an Ellen Squiers Cot or Bed. —Among other bequests, Miss Jessie Jane Donald, of Glasgow, left £1000 each to the Western Infirmary, Glasgow, the Royal Infirmary, Glasgow, the Victoria Infirmary, Glasgow, and the Scottish National Institute for Blinded Soldiers and Sailors; £500 each to the Glasgow Royal Cancer Hospital, the Royal Hospital for Sick Children, Glasgow, the Princess Louise Scottish Home for Limbless Sailors and Soldiers, and the Glasgow Ear, Nose, and Throat Hospital.—Mrs. Matilda King, of Clifton, Bristol, £1000 to Handel Cossham Memorial Hospital, Kingswood, Bristol; £1000 to the Bristol Royal Hospital for Sick Children and Women, St. Michael's-hill, Bristol, and £300 to the Bristol Medical Missionary Society.

Irish Medical Schools and Graduates Association.

The general meeting of this association will be held at the Piccadilly Hotel on Thursday next, Dec. 4th, at 7.15 P.M. On the same evening at 7.45 the association will dine at the hotel, with Dr. W. P. Kennedy in the chair and Sir Frederick O'Connor as official guest. Tickets may be had from Mr. James Carver, St. George-in-the-East Hospital, London, E.1.

King Edward VII. Hospital for Officers.

This hospital, which was founded by Miss Agnes Keyser ("Sister Agnes") at 17, Grosvenor-crescent, London, during the South African War in 1899, has now been incorporated by Royal Charter. At the first meeting of the council last week a message was received from the King expressing his wishes for the continued welfare of the hospital under the new conditions.

Deptford Babies' Hospital.

An appeal is being made on behalf of this hospital of 20 beds maintained by voluntary workers in a densely populated and poor district. It is wholly inadequate to the need, and money is urgently required to enable the work to continue, but a larger modern building is demanded by the situation. The hospital is housed in two ancient cottages one of which is said to have been occupied by Nelson. The kitchen is entered by the door of a ship's cabin, and the street door is secured by a portion of a chain from the *Victory*.

Visits of Hospital Governors.

The governors of Cameron Hospital, West Hartlepool, have adopted a plan for regularising their visits to the wards. A rota is to be prepared of those governors who wish to act as official visitors, divided into 12 groups. Governors so appointed will be entitled to visit the hospital officially once during their month, and they will be accompanied on their tour by the matron, the secretary, or the sister-in-charge.

Wingfield Orthopædic Hospital.

Sir William Morris has given £47,000 for the rebuilding of this hospital, at Headington, near Oxford. The existing buildings consist of war-time huts, and it had been proposed to erect four open-air wards of 20 beds each, at a cost of £12,000. The hospital and its clinics are conducted by the Berks, Bucks, and Oxon Association for the cure of cripples, and there are 130 beds and three private wards. The last annual report stated that the number of patients had increased by 20 per cent. and the new patients attending the clinic by over 30 per cent. Sir William Morris's gifts to hospitals now exceed £364,000.

Medical Fees in Accident Cases.

The County Councils Association has had a letter from the Minister of Health about proposals made to him by the British Medical Association for the payment of doctors' fees for attendance on road accidents. The secretary has reported that the following resolution was passed by the association in 1925: "That, where necessary, members of police forces should be authorised to summon medical assistance in cases of emergency, such as accidents or sudden illness in the street, and that the doctor's fee for such attendance (but not for any subsequent attendance) should, if not obtainable by him from the person attended, be paid by the police authority, and be a charge upon the police fund." The County Councils Association has now decided that, while appreciating the circumstances to which its attention has been drawn by the Minister of Health, it is strongly opposed to the assumption by county councils of any responsibility, otherwise than as is stated in the foregoing resolution, for payments to doctors in respect of services rendered by them in connexion with road accidents.

Proposed English Hospital Sweepstakes.

Sir Gordon Campbell, chairman of St. Bartholomew's Hospital Appeal Committee, and a number of his friends have prepared for consideration a concrete, though tentative, plan to benefit hospitals. "We suggest," they say, "that there should be one or more sweepstakes each year for the benefit of the hospitals; that 33 per cent. of the gross takings should be available for the hospitals concerned, and that expenses should be limited to clerical staff and the printing and distribution of particulars and tickets. On the question of conducting a sweepstake on these lines outside this country, in the event of the necessary legislation here being unobtainable, our views are that, considering the large number of our countrymen who reside on or are visiting the Continent, there should be no insurmountable difficulty in such a sweepstake being organised and conducted on the Continent by a responsible committee resident over there." In order to test opinion, Sir Gordon and his friends are considering the advisability of issuing a questionaire on the subject to the supporters of St. Bartholomew's.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

HOME-GROWN FRUIT.

IN the House of Commons on Wednesday, Nov. 19th, Viscount ELMLEY moved :—

"That this House deplores the present condition of the fruit-growing industry and the heavy losses incurred this year by growers, and calls upon His Majesty's Government to put into effect schemes which, without penalising the consuming public, will secure to the grower an economic return for his crop."

He said that a great deal of jam was being sold to-day as fresh jam which was made from preserved fruit, and that meant that people were not getting what they contracted to buy. He and many others were very uneasy about the public eating jam which had been preserved in sulphur dioxide for two years. Those who had seen this pulped fruit preserved with sulphur dioxide would agree with him that it was most unpleasant looking stuff. He realised that it was not possible for the Minister of Agriculture to send a commission to every country to inquire as to the conditions under which this stuff was made, but he asked the Minister to state the amount of sulphur dioxide which was allowed in fruit.

Mr. DE ROTHSCHILD, in seconding the motion, said it was certainly not right that children—and it was children who consumed most of the jam—should be fed on jam made from stale pulp preserved with SO_2. He urged the Minister of Agriculture to confer with the Minister of Health on this matter in the interests of public health.

JAM MADE FROM PRESERVED PULP.

Dr. ADDISON (Minister of Agriculture) said that he remembered that as a child he was given brimstone and treacle. After all this pulp preserved with SO_2 was brimstone and treacle in a diluted form. The Government could not insist upon the marking of this stuff because quite inadvertently they were prevented by the Merchandise Marks Act from insisting upon a description of such an imported article which underwent a material change after it reached this country. This fruit pulp preserved in SO_2 was boiled down and made into jam, and it was held that thus it had undergone an important change and was sold as home-made jam. It was home-made jam, but not made from British fruit. He hoped it might be possible in a friendly way to negotiate some verbal alterations of the Act which would enable the Government to deal with this difficulty. He thought that the way to help the fruit industry was on the lines of improved organisation, especially in the direction of the small producer.

Dr. FORGAN said he was glad that the Minister of Agriculture hoped to put an end to the use of foreign preserved pulp for jam-making in this country. It was contradictory that they should prevent children from drinking cream containing SO_2 while they allowed them to eat jam containing the same preservative. It might be well to hold an inquiry into the matter as well as into the sale of graded jam in this country. It might be that the dioxide in the pulp was changed in some way when the fruit was made into jam, but chemical analyses of numerous samples of jam had revealed the interesting fact that the chemical composition of the sugar in the jam was so altered that the food value was reduced almost to vanishing-point, and some jams made with pulp were actually harmful to the digestive organs. Either the Ministry of Agriculture or the Ministry of Health ought to investigate this subject. That debate had been concerned primarily with the interests of the producers, but he thought that the consumers' interests ought also to be considered. There had been a slogan for some time past of "Eat more fruit," but speaking as a medical man he found that the doctor had not been kept away from th homes of the people, because not nearly enough fru yet was consumed, and one reason for that was tha although the producers were not getting a fair pric for their produce the prices to the consumer wer in many cases, unnecessarily high. If they coul help the producer and at the same time reduce th price of fruit they would be contributing ver materially to an improvement in the health of th people, particularly in regard to dentition, which wa a disgrace to this country.

The motion was agreed to without a division.

MOTORISTS AND THIRD-PARTY INSURANCE.

On Tuesday, Nov. 25th, Mr. REMER asked leave t introduce the Road Traffic Act 1930 (Amendment Bill, a measure to compel insurance companies t issue third-party insurance certificates to moto drivers having no convictions for careless, reckless or dangerous driving against them. He said tha insurance companies were very largely refusing t issue insurance certificates to people who had pre viously insured with them, the reason given bein that those persons had a bad insurance record The effect of this was to give insurance companie the power to say whether a person should drive car or not, as the Road Traffic Act made it a condi tion of the issue of a driving licence that the applican should be insured against third-party risks. H contended that the decision as to whether a perso was to drive a car or not should not be left to th discretion of insurance companies.

Mr. C. WILLIAMS opposed the Bill. He said tha although it would compel insurance companies t issue certificates for third-party insurance to certai people, it did not state the terms on which they shoul do so. This would mean that those insurances woul only be granted at prohibitive rates, which was contradiction of the terms of the Bill.

Leave was granted to introduce the Bill by 24 votes to 100, and the Bill was brought in and read first time.

HOUSE OF COMMONS.

WEDNESDAY, NOV. 19TH.

Maternal Mortality.

Mr. RHYS DAVIES asked the Minister of Health whether the rate of maternal mortality differed as between women insured under the national health insurance scheme and those outside its scope; and, if so, what was the difference in percentages.—Mr. GREENWOOD replied: I regret that no statistics are available on this subject.

Suicides in Great Britain.

Mr. KINLEY asked the Home Secretary the numbers of suicides in Great Britain for each of the past ten years to the latest date.—Mr. SHORT replied: The numbers of suicides in England and Wales have been as follows:—1920, 3373; 1921, 3715; 1922, 3844; 1923, 3919; 1924, 3679; 1925, 4054; 1926, 4408; 1927, 4863; 1928, 4846; 1929 (provisional figures), 4907. I have no information as to Scotland, and any question should be addressed to the Secretary of State for Scotland.

THURSDAY, NOV. 20TH.

White Lead Poisoning.

Mr. GRAHAM WHITE asked the Home Secretary the number of cases of lead poisoning notified, and the number of deaths since the imposition of the new regulations dealing with the use of white lead.—Mr. SHORT replied: The regulations under the Lead Paint Act came into force on Oct. 1st, 1927. During 1928, 87 cases were reported, including 20 deaths; during 1929, there were 75 cases, including 10 deaths; and during the nine months ending Sept. 30th last, there were 43 cases, including 9 deaths.

Mr. WHITE: Could the hon. gentleman say whether he is satisfied that these regulations are sufficient to meet the needs of the case?

Mr. SHORT: I may say that they are constantly under review, having regard to the facts on cases that are brought to our notice.

Erskine House Hospital.

Mr. NEIL MACLEAN asked the Minister of Pensions the aximum accommodation at Erskine House and the number f limbless ex-Service men treated there during 1925, 1926, 927, 1928, and 1929 respectively.—Mr. ROBERTS replied: he present number of beds at Erskine House available or Ministry of Pensions cases is 63. During the years 925–1929 limbless and other surgical cases were treated t the Ministry of Pensions surgical centre at Bellahouston, hich will shortly be transferred, under the present surgical ontrol, to Erskine House.

Manufacture and Sale of Absinthe.

Major OWEN asked the Home Secretary whether he was repared to introduce legislation forbidding the manuacture, sale, and use of absinthe in this country.—Mr. HORT (Under-Secretary, Home Office) replied: No, Sir.

Major OWEN: Is the hon. gentleman aware that legislaon has been passed already in France, Belgium, Switzerand and Germany forbidding the sale and manufacture f this drink, and is this country going to lag behind these ther countries in this matter?

Mr. SHORT: I am aware of the facts stated by my hon. riend, but so far as I am aware there is no ground on which o take the action he suggests.

Supply of Milk to School Children.

Dr. HASTINGS asked the President of the Board of Educaon if he could give the relative proportions in which ertified, grade A (T.T.), pasteurised, and ordinary undesigated milk were supplied to children in elementary schools.—ir CHARLES TREVELYAN replied: I regret that I am unable o give this information. In approving arrangements for ie provision of milk by local education authorities the oard call the attention of the authority to the importance f their satisfying themselves as to the purity and quality f the milk, but they have no information as to the relative roportions in which the different grades of milk are supplied.

Tuberculosis on Tyneside.

Mr. EDE asked the Minister of Health if he had received report from his representative who recently investigated ie prevalence of tuberculosis in the county borough of outh Shields; if so, what action he proposed taking; and he would consider at an early date calling a conference the authorities for dealing with tuberculosis on the yneside, with a view to securing the inauguration of a entralised and comprehensive scheme at the earliest ossible moment.—Mr. GREENWOOD replied: The answer o the first part of the question is in the affirmative. I have ready communicated with the town council and have ade certain suggestions for increasing the hospital proision available for the treatment of this disease in South ields. As regards the last part of the question, if the cal authorities concerned consider that a conference ould be desirable, I shall be glad to do anything in my ower to facilitate it.

Mr. EDE: May I take it that the right hon. gentleman ould be willing to call such a conference if requested and range for one of his officers to attend?

Mr. GREENWOOD: Oh, most certainly.

Drug Advertisements in Medical Papers.

Mr. FREEMAN asked the Minister of Health whether he ould consider the desirability of amending the Medical ct of 1886 with a view to controlling advertisements of rugs in medical papers.—Mr. GREENWOOD replied: I am ot aware that there is any ground for proposing to extend e control which I understand is already exercised over dvertisements of this character by the proprietors of the edical journals concerned.

Treatment in Mental Hospitals.

Mr. KINLEY asked the Minister of Health whether the eatment of patients in public mental hospitals was laid own by the Board of Control or whether the medical ficer in charge had full or partial liberty in matters of eatment.—Mr. GREENWOOD replied: The answer to the st question is in the negative and to the second that the ethod of treatment of patients is within the discretion the medical officer of an institution.

Dissection of Paupers' Bodies.

Mr. DAY asked the Minister of Health whether his attenon had been drawn to the fact that the public assistance mmittees of several counties had decided that in future odies of friendless paupers were to be available for disction at medical schools; whether any regulations existed which a friendless pauper, who was dying in a hospital, as notified of the fact that his body would be handed er for the purpose of dissection unless he protested; and were any arrangements made by the authorities to satisfy themselves that when the dissected body was buried the correct remains of the body were properly interred.—Mr. GREENWOOD replied: The answer to the first and third parts of the question is in the affirmative. As regards the second part, any inmate of an institution may express a desire that his body shall be interred without anatomical examination, and Section 7 of the Anatomy Act, 1832, provides that such a wish shall be respected.

Closing of Bellahouston Pensions Hospital.

Mr. NEIL MACLEAN asked the Minister of Pensions (1) when the Ministry of Pensions first received intimation from the Glasgow Corporation to remove from Bellahouston where suitable alternative accommodation was looked for; and why such alternative accommodation was refused and Erskine House selected; and (2) whether he was aware of the dissatisfaction among ex-Service men in Glasgow at the publication of his decision to have ex-Service patients requiring indoor treatment removed to Erskine House from January, 1931; and whether he would reconsider his decision.—Mr. ROBERTS replied: Repeated intimations have been received from the Glasgow Corporation that the site of the hospital is required for civic purposes, and, though they generously extended the department's occupation on several occasions, I have, as already stated, now decided that existing requirements do not justify further occupation of the site beyond January next. After careful consideration I have come to the conclusion that Erskine House is entirely suitable as alternative accommodation for the treatment of ex-Service men in the West of Scotland, and I am unaware of any ground for altering this decision.

TUESDAY, NOV. 25TH.

Education of Mentally Defective Children.

Major CHURCH asked the President of the Board of Education if local education authorities compiled complete records of the careers of children after leaving school who had been segregated for education purposes in schools for the mentally defective.—Mr. MORGAN JONES (Parliamentary Secretary to the Board of Education) replied: The Board urge all local education authorities which provide schools for mentally defective children to compile records of the after-careers of children who have left, so far as they are able, and nearly all authorities do so; but they are not in a position to ensure that these records shall be complete. An analysis of the records for seven areas will be found in paragraph 88 of the Report of the Board's Chief Medical Officer for 1925.

Imports of Cream.

Brigadier-General CLIFTON BROWN asked the President of the Board of Trade how much unsterilised cream had been imported into this country since Jan. 1st, 1930, and from what countries it came.—Mr. W. GRAHAM replied: During the ten months ended Oct. 31st, 1930, the total quantity of cream imported into this country amounted to 116,733 cwts. of which nearly 99 per cent. was consigned from the Irish Free State, Denmark, the Netherlands, and Switzerland. I am unable to state what proportion of this cream was unsterilised.

Experiments with Poison Gas.

Mr. SINKINSON asked the Secretary for War how many soldiers were being experimented upon by being gassed at Porton; and what was the extra allowance in pay given for having gas tried upon them.—Mr. T. SHAW replied: No soldiers are "gassed" at Porton in the ordinary sense of the word. But volunteers, averaging some six a week, undergo tests with the object of proving the efficacy of preventive and curative treatment for skin burns and of confirming the adequacy of the protection afforded by respirators. The volunteers receive extra leave, and in certain cases pay of 1*s.* or 6*d.* for each test.

Mr. TURNER asked the Secretary for War whether any of the experiments undertaken under the direction of the Chemical Warfare Committee had reference to the offensive possibilities of poisonous or asphyxiating gases in warfare.—Mr. T. SHAW replied: The research and experiments now being conducted have solely defensive measures in view.

Physical Condition of Army Recruits.

Major GLYN asked the Secretary for War if he would furnish a return showing the general average physical condition of recruits at all the Army depôts, Royal Engineers, Royal Artillery, cavalry, foot guards, infantry of the line, tank corps, and departmental services on joining the Service, with any notes the Director-General of Army Medical Services might care to make as to the usual disabilities and defects that were most noticeable, and indicating the physical development of these men after three and six months' training at the depôts and with their units.—

Mr. T. SHAW replied: The standard of physical fitness required of recruits for enlistment in the Army is laid down in the instructions for the physical examination of recruits. For the recruiting year 1928–29, which is the latest period for which information is yet available, the main disabilities leading to the discharge of recruits were: disease of the middle ear; defects of lower extremities; disease of heart; and defective vision. An investigation which is at present being carried out in the London area appears to show that the general physical standard of the recruits actually accepted in that area is, if anything, higher than that of recruits accepted before the war. I am further informed by the Army medical authorities that the physical development of recruits during their first six months o training is most satisfactory, and that weight is put on at the depôts to the average of 6¼ lb. Figures are not available as to the weight increase after three months' training, but both the general physical development and increase in weight are steadily and evenly progressive.

Medical Diary

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Dec. 2nd.—8 P.M., PATHOLOGY. Laboratory Meeting at the Imperial Cancer Research Fund Laboratories, Queen-square, W.C. 8.30 P.M., ORTHOPÆDICS. Paper: Dr. L. Böhler (Vienna): The Treatment of Fractures of the Upper Extremity. A discussion will follow.

WEDNESDAY.—5 P.M., HISTORY OF MEDICINE. Discussion: The Relation of the Teaching of the History of Medicine and that of Clinical Teaching. Opener: Dr. W. R. Bett: Clio by the Bedside. MEDICINE. Members of this Section are specially invited to attend and take part in the discussion. 8.30 P.M., SURGERY. Discussion: Surgery in Diabetes. Openers: Prof. G. E. Gask, Dr. George Graham, and Dr. Lawrence. Followed by Mr. C. A. R. Nitch and others. MEDICINE. Members of this Section are specially invited to attend and take part in the discussion.

THURSDAY.—8 P.M., TROPICAL DISEASES. Presidential Address by Dr. J. Gordon Thomson.

FRIDAY.—10.30 A.M., OTOLOGY. (Cases at 9.30 A.M.) Discussion on Intracranial Complications of Otitic Origin: Neurological and Pathological Investigation. Papers by Dr. George Riddoch and Dr. A. B. Rosher. Discussion on the Committee's Report on Hearing Tests. 5 P.M., LARYNGOLOGY. (Cases at 4 P.M.) Demonstrations of cases illustrating Plastic Repair after Operations on the Upper Jaw by Mr. Musgrave Woodman, and illustrating Repair after Operations on the Pharynx by Mr. Lionel Colledge. A short demonstration will be given by Dr. Arthur F. Hurst of A Method of Treatment in Asthma and Hay-fever. 8.30 P.M., ANÆSTHETICS. Cinematographic demonstration by Prof. F. T. G. Hobday on his anæsthetic apparatus and the administration of anæsthetics in veterinary surgery. Cases will be shown.

BRITISH INSTITUTE OF RADIOLOGY AND RONTGEN SOCIETY,

WEDNESDAY, Dec. 3rd.—2.30 P.M. (at the Central Hall, Westminster), official opening of Exhibition by Sir Humphry Rolleston. 3.30 P.M., Presidential address by Mr. C. E. S. Phillips, F.Inst.P.

THURSDAY.—10.30 A.M. to 12.30 P.M., Technical papers. 5 P.M., Prof. G. P. Thomson, F.R.S.: Some Recent Experiments on Cathode Rays (Mackenzie Davidson lecture).

FRIDAY.—10.30 A.M., Medical papers. Dr. H. A. Harris: The Growth of Bone as illustrated by Radiography. Dr. Donald Hunter: Changes in the Bones in Hyperparathyroidism and Hyperthyroidism. 4.30 P.M., Dr. A. E. Barclay: The Danger of Specialisation (Silvanus Thompson lecture).

SOCIETY OF CHEMICAL INDUSTRY (London Section).

MONDAY, Dec. 1st.—8 P.M. (in the Rooms of the Chemical Society, Burlington House, W.), Mr. J. H. Coste, D.Sc.: Analytical Chemistry, its Past History and Future Development.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.

MONDAY, Dec. 1st.—8 P.M., Prof. C. R. Darling, F.I.C.: Modern Domestic Scientific Appliances, Heating of Rooms, and Hot Water Supply.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

FRIDAY, Dec. 5th.—8 P.M. (at the De Vere Hotel, Kensington High-street), Dinner, followed by discussion.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn-fields, W.C.

MONDAY, Dec. 1st, and following WEDNESDAY and FRIDAY.—4 P.M., Mr. F. W. Twort: Diseases of Bacteria. (Free lectures.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Dec. 1st to SATURDAY, Dec. 6th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. Mon. at 4 P.M., free lecture by Mr. W. H. Ogilvie on Recent Advances in Surgery. Tues., at 10, Bedford-square, W.C. Special M.R.C.P. Lecture at 8.30 P.M., by Dr. Knyvett Gordon: The Diagnos of Diseases of the Blood-forming Organs. Followe by a laboratory demonstration.—KING'S COLLEG HOSPITAL, Denmark-hill, S.E. Thur., at 2 P.M., fre demonstration by Dr. Terence East (Cardiol).— WESTERN OPHTHALMIC HOSPITAL, Marylebone-roa N.W. Thur., at 2 P.M., free demonstration in Ou patient Department by Mr. T. C. Summers.—WE END HOSPITAL FOR NERVOUS DISEASES, 73, Welbec street, W. Special course in neurology at 5 P.M. dail —HOSPITAL FOR DISEASES OF THE SKIN, Blackfriar road, S.E. Afternoon course.—THE INFANTS HOSPITA Vincent-square, S.W. Special afternoon course.

NORTH-EAST LONDON POST-GRADUATE COLLEG Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Dec. 1st.—2.30 to 5 P.M.: Medical, Surgical, a Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nos and Throat Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and E Clinics. Operations.

THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M Medical, Surgical, Throat, and Ear Clinics. Operatio

FRIDAY.—10.30 A.M.: Ear, Nose, and Throat Clinics. 2. to 5 P.M.: Medical, Surgical, and Children's Diseas Clinics. Operations.

WEST LONDON HOSPITAL POST-GRADUATE COLLEG Hammersmith, W.

MONDAY, Dec. 1st.—10 A.M. to 1 P.M., Surgical War Genito-Urinary Operations, Skin Department. 2 P.M Operations, Surgical Wards, Medical, Surgical, E and Gynæcological Out-patients.

TUESDAY.—10 A.M. to 1 P.M., Medical Wards, Clini Demonstration (Surgical), Dental Department. 2 P.M Operations, Medical, Surgical, and Throat Out-patien

WEDNESDAY.—10 A.M. to 1 P.M., Medical and Surgi Wards, Children's Medical Out-patients. 2 P.M Gynæcological and General Operations, Medic Surgical, and Eye Out-patients.

THURSDAY.—10 A.M. to 1 P.M., Neurological Out-patien Demonstration of Fractures. 2 P.M., Operatio Medical, Surgical, and Genito-Urinary Out-patien

FRIDAY.—10 A.M. to 1 P.M., Medical Wards, Skin Depa ment, Dental Department, Clinical Demonstrati (Medical). 2 P.M., Operations, Medical, Surgical, a Throat Out-patients.

SATURDAY.—10 A.M. to 1 P.M., Throat Operations, Bacter Therapy Department, Medical Wards, Childre Medical and Surgical Out-patients.

KING'S COLLEGE, Strand, W.C.

THURSDAY, Dec. 4th.—5 P.M., Mr. W. Robson, D.Sc Protein Metabolism. (Last lecture.)

KING'S COLLEGE HOSPITAL MEDICAL SCHOO Denmark-hill, S.E.

THURSDAY, Dec. 4th.—9 P.M., Dr. Sydney Thomso Treatment of Syphilis.

UNIVERSITY COLLEGE, Gower-street, W.C.

MONDAY, Dec. 1st.—4.15 P.M., Dr. Charles Singer: Fou Centenary of the Invention of the Word "Syphili 5 P.M., Mr. L. E. Bayliss, Ph.D.: Respiratory Functio of the Blood. (Last lecture.)

CITY OF LONDON MATERNITY HOSPITAL, City-road, E

THURSDAY, Dec. 4th.—5 P.M., Dr. McKim McCullag Treatment of Obstructed Labour.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATIO St. James's Hospital, Ouseley-road, Balham, S.W.

THURSDAY, Dec. 4th.—4 P.M., Dr. Worster-Drough Recent Advances in Diagnosis and Treatment of Nervous System.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, Dec. 3rd.—4.30 P.M., Mr. C. H. Mills: So Interesting Urological Cases.

CENTRAL LONDON THROAT, NOSE, AND EAR HO PITAL, Gray's Inn-road, W.C.

FRIDAY, Dec. 5th.—4 P.M., Mr. N. Asherson: Chro Otorrhœa.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

MONDAY, Dec. 1st.—2.15 P.M., Mr. Frederick Roqu The First Stage of Labour.

TUESDAY.—2.15 P.M., Mr. C. S. Lane Roberts: Some Mi Gynæcological Ailments. 3.15 P.M., Mr. A. M. Zamo Indications for Operative Interference in Ear Disea

WEDNESDAY.—2.15 P.M., Dr. Bernard E. Schlesing Demonstration of Cases in Children's Ward. 3.15 P. Dr. H. C. Semon: Modern Views on the Nature Treatment of Eczema.

THURSDAY.—2.15 P.M., Mr. E. Wolff: Cataract. 3.15 P. Dr. P. O. Ellison: The Cerebro-Spinal Fluid.

FRIDAY.—2.15 P.M., Mr. W. B. Gabriel: Obstruct Jaundice. 3.15 P.M., Dr. C. Gouldesbrough: Radiol of Gall-bladder and Urinary Tract.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospi 49, Leicester-square, W.C.

TUESDAY, Dec. 2nd.—5 P.M., Dr. A. C. Roxburgh: Cutane Syphilis (1).

THURSDAY.—5 P.M., Dr. A. C. Roxburgh: Cutane Syphilis (2).

ST. JOHN'S HOSPITAL, Morden Hill, Lewisham.

MONDAY, Dec. 1st.—4.30 P.M., Dr. John Gibbens: Jo Diseases in Children.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russ square, W.C.

WEDNESDAY, Dec. 3rd.—4 P.M., Prof. D. B. Blacklo Prevention of Disorders in Tropical Countries.

THURSDAY.—4 P.M., Mr. F. J. McCann: Medical Argume Against Contraception.

NSTITUTE OF HYGIENE, 28, Portland-place, W.
WEDNESDAY, Dec. 3rd.—3.30 P.M., Dr. V. Zachary Cope: Causation and Prevention of Appendicitis.

ANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
TUESDAY, Dec. 2nd.—4.15 P.M., Mr. H. H. Rayner: Diagnostic Value of Recent Advances in X Ray Examination of the Urinary and Biliary Tract.
FRIDAY.—4.15 P.M., Dr. W. Blair: Mental Exhaustion.

NIVERSITY OF SHEFFIELD POST-GRADUATE CLINIC.
FRIDAY, Dec. 5th.—3.30 P.M. (at the Royal Infirmary), Dr. J. H. Cobb: Syphilitic Infections of the Nose and Throat.

NCOATS HOSPITAL, Manchester.
THURSDAY, Dec. 4th.—11 A.M., Dr. N. Kletz: Clinical Demonstration. 4.15 P.M., Dr. A. Renshaw: Systematic Pathological Investigation of a Case of Rheumatoid Arthritis.

Appointments

OYD, J. LINDSAY, M.D. Glasg., F.R.C.P. Edin., has been appointed Assistant Honorary Physician to the North Staffordshire Royal Infirmary.
RY, R. M., L.R.C.P. Lond., M.R.C.S., Assistant Director of the Research Laboratory, Queen Charlotte's Maternity Hospital.
OLDBERG, I., M.B., Ch.B. Edin., House Surgeon, Hampstead General and North-West London Hospital.
ACKAY, I. C., M.B., Ch.B. Edin., D.P.H., Deputy Medical Officer of Health for Cheshire.
CREDIE, P. A., M.B., Ch. B. Edin., Medical Referee under the Workmen's Compensation Act for Wigtown County.
ILLIAMS, G., M.B., Ch.B. Liverp., Medical Officer, Trawsfynydd, Merioneth.
chmond, Whitworth, and Hardwicke Hospitals: ABRAHAMSON, L., M.D., B.Ch. Dub., and O'CONNOR, J., M.D., B.Ch.N.U.I., Honorary Physicians.

Vacancies

For further information refer to the advertisement columns.

bert Dock Hospital, Connaught-road, E.—Res. M.O. At rate of £110.
lfast, Joint Nursing and Midwives' Council for Northern Ireland. Examiners of Midwives.
rkenhead General Hospital.—Sen. H.S. £150.
rmingham Ear and Throat Hospital, Edmund-street.—Res. H.S. £150.
adford Royal Eye and Ear Hospital.—Jun. H.S. £150.
ry St. Edmunds, West Suffolk General Hospital.—Jun. Res. M.O. £150.
rdiff Royal Infirmary.—Two Hon. Surgeons.
ntral London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Hon. Asst. to Out-patient Dept.
elsea Hospital for Women, Arthur-street, S.W.—Jun. H.S. At rate of £100.
eshire Joint Sanatorium, Market Drayton, Salop.—H.P. £250.
ester Royal Infirmary.—H.S. £150.
ownpatrick, N. Ireland, Down Mental Hospital.—Jun. Asst. M.O. £300.
eadnought Hosp. Greenwich.—H.P. and H.S. At rate of £110.
ublin, Dr. Steeven's Hospital.—Res. Surg. Also Res. Asst. Surg.
unedin, New Zealand, Otago University.—Prof. of Midwifery and Gynæcology. £2000.
unfermline, West Fife Infectious Diseases Joint Hospital.—Asst. M.O. £400.
eter, Royal Devon and Exeter Hospital, Pathological Department.—Pathologist. £500.
asgow Corporation, P.H. Dept.—Deputy M.O. for Mental Services. £1000.
ampshire County Council.—Asst. County M.O. £600.
ampstead General and North-West London Hospital, Haverstock Hill, N.W.—H.P. and H.S. Each at rate of £100.
rrogate Infirmary.—Res. Sen. and Jun. H.S.'s. At rate of £150 and £125 respectively. Also Res. H.P. At rate of £150.
uddersfield Royal Infirmary.—H.S. At rate of £150.
ull Royal Infirmary, Sutton Branch.—H.P. At rate of £160.
eds, Killingbeck Tuberculosis Sanatorium.—Asst. Res. M.O. £250.
incolnshire (Kesteven) C.C.—Asst. County M.O.H. £500.
verpool, Royal Children's Hospital.—Res. H.P. At rate of £100.
verpool, Royal Southern Hospital.—Hon. Dental Surgeon.
verpool University.—Jun. Lecturer in Dept. of Pathology, £300.
ndon Female Lock Hospital, 283, Harrow-road, W.—H.S. At rate of £150.
ndon Temperance Hospital, Hampstead-road, N.W.—Cas. O. Also H.P. At rate of £120 and £100 respectively.
westoft, St. Luke's Hospital.—Jun. Asst. M.O. £500.
anchester, Ancoats Hospital.—H.S. for General Surgery, &c. At rate of £100. Also Med. and Surg. Registrars. Each £100. Also Orthopædic Reg. (part-time). £25.
anchester Babies' Hospital, Burnage-lane, Levenshulme.—Sen. Res. M.O. At rate of £125.
anchester City, Abergele Sanatorium.—Med. Supt. £900.
anchester Royal Eye Hospital.—Jun. H.S. £120.
ildmay Mission Hospital, Austin-street, Bethnal Green, E.—Asst. Cas. O. At rate of £125.
iller General Hospital, Greenwich-road, S.E.—H.P. and H.S. Each at rate of £125. Also Out-patient Officer. At rate of £150.
onmouthshire County Council.—Two Asst. M.O.'s. Each £500.
ational Hospital, Queen-square.—H.P. £150.
ewcastle-upon-Tyne, Hospital for Sick Children.—Res. H.P. Also Jun. H.S. Each at rate of £100.
New Zealand, Hawkes Bay Hospital, Napier.—Pathologist. £750.
Nottingham City Infirmary, Hucknall-road.—Two M.O.'s. Each £350.
Oswestry, Shropshire Orthopædic Hospital.—Asst. Orthopædic Surgeon. £450.
Plymouth Central Hospital.—H.S. At rate of £120.
Pontefract General Infirmary.—H.S. £150.
Preston, Sharoe Green Hospital, Fulwood.—Jun. Res. M.O. At rate of £104.
Prince of Wales's General Hospital, N.—Hon. Clin. Assts. to Various Departments.
Queen Mary's Hospital for the East End, Stratford, E.—Res. M.O., H.S.'s, H.P.'s, &c. At rate of £200, £150, and £120 respectively. Also Anæsthetist to Dental Dept. £25.
Queen's Hospital for Children, Hackney-road, E.—H.P. and H.S. Each at rate of £100.
Royal National Orthopædic Hospital, Great Portland-street, W.—Hon. Asst. Surg.
St. Leonards-on-Sea, Buchanan Hospital.—Jun. H.S. £125.
St. Mary's Hospital, W.—Surgical Registrar. £200.
St. Thomas's Hospital.—Chief Asst. in Physico-therapy Dept. £250.
Salford Royal Hospital.—Res. Surg. O. At rate of £200. Also H.P., Two H.S.'s, and Cas. H.S. Each at rate of £125.
Salisbury, General Infirmary.—H.S. £150.
Sheffield, City of.—Asst. Tuber. Officer. £500.
Sheffield Royal Hospital.—Ophth. H.S. Also Res. Anæsthetist. Each at rate of £80.
Sheffield Royal Infirmary.—Ophth. H.S. £80–£100. Also Clin. Asst. to Ear, Nose, and Throat Dept. £300.
Somerset County Council, Sandhill Park, Bishop's Lydeard, nr. Taunton.—Med. Supt. £850.
South Shields, Harton Hospital.—Two H.S.'s. Each £120.
Staffordshire County Council.—Asst. Bact. and Path. £600.
Tilbury Hospital, Essex.—H.S. At rate of £150.
West London Hospital, Hammersmith-road, W.—Non-Res. Cas. O. £250. Also H.P., H.S., and Aural and Ophth. H.S. Each at rate of £100.
Western Ophthalmic Hospital, Marylebone-road, N.W.—Surg. Reg.
Wigan Royal Infirmary.—Res. M. and Surg. O. and Reg. £250.
Windsor, King Edward VII. Hospital.—H.S. At rate of £100.
Woolwich and District War Memorial Hospital, Shooters Hill, S.E.—H.P. At rate of £100. Also Part-time Pathologist. £300.
Worcester General Infirmary.—Jun. Res. M.O. £120.
Wrexham and East Denbighshire War Memorial Hospital.—Hon. Surgeon to Ear, Nose, and Throat Dept.
York Dispensary.—Res. M.O. £150.

Births, Marriages, and Deaths

BIRTHS.

INKSTER.—On Nov. 15th, at Middlesbrough, to Olive Mary, the wife of John Inkster, M.D. Aberd., M.R.C.P. Lond.—a daughter.
JOULES.—On Nov. 21st, at South Hill Nursing Home, Mary, the wife of Horace Joules, M.D., M.R.C.P., The Hospital, Selly Oak, Birmingham, of a son.

MARRIAGES.

COPEMAN—BOURNE.—On Nov. 15th, at St. Albans Cathedral, William Sydney Charles Copeman, M.B., M.R.C.P., to Helen, youngest daughter of the late W. W. Bourne, Esq., and Mrs. Bourne, of Garston Manor, Herts.

DEATHS.

LOCKET.—On Nov. 18th, at his residence, New Holme, Bratton, Wilts., Thomas Wood Locket, M.D., M.R.C.S.
MAINGAY.—On Nov. 17th, at a nursing home, Henry Bertram Maingay, F.R.C.S., of Queen-street, Scarborough, aged 63.
SCHARLIEB.—On Nov. 21st, at the residence of her son, Dr. Herbert Shirley, York-terrace, Regent's Park, Mary Scharlieb, Dame of the British Empire, M.D., M.S. Lond., LL.D. Edin., J.P., aged 85.
SNOW.—On Nov. 20th, suddenly, at St. Leonards-on-Sea, Herbert Snow, M.D., late Senior Surgeon and Consultant, Cancer Hospital, London.
STEEL.—On Nov. 21st, at Abergavenny, Colonel William Dyne Steel, D.L., J.P., V.D., M.D., aged 75.
WALLACE.—On Nov. 18th, at Woking, Robert William Lessel Wallace, M.C., M.D. Edin., aged 49.
WILSON.—On Nov. 21st, in a London nursing home, Dr. Ralph W. Wilson, M.D., of The Moorings, Kew Gardens.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

THE annual congress and exhibition of the British Institute of Radiology, incorporated with the Rontgen Society, will be opened by Sir Humphry Rolleston at the Central Hall, Westminster, at 2.30 P.M. next Wednesday, Dec. 3rd. Mr. C. E. S. Phillips will give the presidential address. The Mackenzie Davidson lecture will be delivered by Prof. G. P. Thomson, F.R.S., on Thursday at 5 P.M., and the Silvanus Thomson lecture by Dr. A. E. Barclay on Friday at 4.30. Further details will be found in our Medical Diary.

NOTES, COMMENTS, AND ABSTRACTS

WAKENING OF HOSPITAL PATIENTS.

THE Central Public Health Committee of the London County Council has inquired into a suggestion that hospital patients should not be awakened before 6 o'clock in the morning. Under the late boards of guardians the times of wakening patients at the 28 general hospitals varied considerably. At ten of them patients were wakened at or before 5 A.M., at nine the times of wakening began at 5 A.M. or later, and proceeded by degrees, extending in one case to as late as 7.30 A.M., and at the remaining nine the time for wakening did not begin until 6 A.M. These arrangements have so far been continued. The Committee says :—

"It will be appreciated from the answers to the questionaire issued by the Central Bureau of Hospital Information [1] that informed opinion is by no means unanimous on the principle of allowing patients to sleep until 7 A.M., apart from purely staff considerations. Nor can local conditions be ignored. In London, the cases of Middlesex and Guy's Hospitals are illustrative. At the former, situated in the West Central district of London, external traffic conditions with resultant noise continue until late at night and recommence at a relatively late hour in the morning. At Guy's Hospital, in close proximity to Borough Market, traffic begins at a very early hour and ceases relatively early at night. The wards at Guy's Hospital close down at 8 P.M. and reopen at 6 A.M. At the Warneford, Leamington and South Warwickshire General Hospital the routine awakening of patients at 5 A.M. was altered for a month or two as an experiment, and breakfasts were served at 7 A.M. and after a time at 8 A.M. Objections were taken to the new arrangements on the ground that too long a period elapsed since the previous meal of the evening before, and that it was not possible in the shorter time available to clean and prepare the wards. With the agreement of the majority of nurses and patients the former routine was reverted to.

"Evidence shows, therefore, that there can be no hard-and-fast rule. . . . Generally speaking, there must be a time for a particularly important duty to which other considerations must conform. This may be taken as the time at which the medical staff commence their rounds, after the patients have breakfasted and have been prepared for the day, in order to finish the rounds before the patients' dinner-time. This time is usually in the neighbourhood of 10 A.M. The time necessary to prepare patients and wards for the medical officers' visits is governed by the staff available. In turn, the times of awakening regulate the times for closing down, in order to ensure that the patients have sufficient rest. In the case of the Council's hospitals the patients are only disturbed in exceptional cases after 8 P.M., and nine to ten hours are therefore available for rest."

The Committee proposes that, as far as practicable, no patient should be awakened, except in special circumstances, before 6 A.M., and that those hospitals which are below this standard should be raised up to the standard as and when staff are available.

INFRA-RED IRRADIATION.

RADIANT heat is frequently prescribed and has proved valuable in the treatment of various and dissimilar clinical conditions. It is more than probable that these conditions are not all benefited to the maximum extent by exposure to identical regions of the spectrum. Differences in the permeability of the tissues to various rays and differences in the depth of the lesions—to mention two obvious factors only—make it essential to obtain apparatus whose emission is known and whose output can be controlled.

The Beaumont-Mason infra-red generator made by Messrs. Mason (Electro-Medical), Ltd., 96, Wigmore-street, London, W., consists of five graphite elements mounted so as to allow of flexibility and ready adjustment in any position. Each element carries its own electrical component and is provided with a pilot lamp. Graphite was chosen for the elements because it is said to have the highest emission factor of all the materials tested for that purpose. Infra-red rays are produced by heating the elements to th desired extent and the patient's skin can be cool during treatment by the use of an electric fan. Th absence of an admixture of visible rays and th absence of loss of radiation by filtering throu coloured glass are notable points in this apparatus.

In the Sollux lamp (British Hanovia Quartz Lam Co., Ltd., Slough), use is made of both visible an infra-red radiation. A 1000 watt bulb is mounted front of a large parabolic reflector and by mea of focal adjustment it is possible to secure diverger parallel, or convergent rays. The feature of intere is the presence of an adjustable resistance whi controls the intensity of the luminous heat-sourc The apparatus is supplied with a small conic reflector used as an extension to the large reflect for irradiation of small areas and with a filter-fra and glass filters which can be used when it is desir to exclude one part of the spectrum from the ra emitted by this lamp.

[1] See THE LANCET, 1930, i., 972.

LYMPHATIC LEUKÆMIA.

To the Editor of THE LANCET.

SIR,—I should be grateful if any of your reade could put me in touch with a case of lymphat leukæmia for a special investigation. A case that h been under observation for a long time and y showed symptoms would be of particular value.

I am, Sir, yours faithfully,

Guy's Hospital, S.E., Nov. 24th, 1930. E. P. POULTON.

ULCERS OF THE SKIN.

To the Editor of THE LANCET.

SIR,—I read with great interest in your issue August 16th (p. 382) your quotation on this subj from *Archiv für Schiffs- und Tropen-Hygie* Leishmaniasis of the skin is a common disease Arabia. It is usually named after the city or count where the disease exists. In Transjordania a Palestine it is called Jericho ulcer, white Alep button, Bagdad ulcer, Nile ulcer, and Yeman ul are a few of its very numerous names. While readi your quotation the idea of looking for leishma parasites occurred to me and I rejoiced to find confirmed by Dr. Ziemann.

The Prince Abd-alla of Transjordania develop eight ulcers on his arm a month after his return his country from a visit last year to his brother t King of Iraq. Microscopic examination of scrapin from the edges of two of the eight ulcers show leishmania parasites. All kinds of local treatme and intramuscular injections of Fouadin (an orga antimony compound) were without avail, until finally succeeded in procuring an apparatus th condenses, in the form of solid snow, carbon diox gas under pressure from iron cylinders. Cauterisi the ulcer with solid carbon dioxide reduces its nat to a simple skin ulcer that can be cured within two three weeks, with a simple antiseptic dressing. T ointment I used was 2 per cent. pellidol (di-acet amino-azotoluol).

The eight ulcers of the Prince and one ulcer on t hand (dorsal aspect) of a servant of his were cured this simple and safe way. There is no doubt th solid carbon dioxide is the specific of leishmania of the skin. There are two theories to explain t mode of action. The first is that the ulcer bein disease of hot countries, it is reasonable to treat with excessive cold, and the temperature of so carbon dioxide is 79° C. below zero. The second the attributes the cure to the destruction of the lei mania parasites by the leucocytosis that follows t application of the solid gas. It is very probable th both freezing and leucocytosis coöperate in curi

I am, Sir, yours faithfully,

Amman, Transjordania. D. F. TU-TUNJI

ADDRESSES AND ORIGINAL ARTICLES

MATERIA MEDICA AND THE PRACTICE OF MEDICINE.*

By David Campbell, *M.C.*, M.A., B.Sc., M.D. Glasg.,
REGIUS PROFESSOR OF MATERIA MEDICA AND THERAPEUTICS IN THE UNIVERSITY OF ABERDEEN.

A distinguished teacher of mine once startled his class by asking what a tiger does when it is suffering from septicæmia. The students regarded the conundrum as merely amusing, yet the answer is of considerable importance. For the tiger, so far as we know, would differ from most human beings in having no preconceived notions as to how to deal with the situation. It would not be troubled with current theories of physiology and pathology, nor would it be handicapped by the fads and fashions of the therapeutic notions of the time. It would probably simply go and rest near a pool of water, where it could assuage its feverish thirst. It would, in fact, adhere strictly to the method of Hippocrates, relying entirely on the power indicated in the ending canon of that great physician, *νούσων φύσεις ἰητροί*, or, as it is better known in its translated and paraphrased form, "vis medicatrix naturæ."

Possibly, however, our tiger in its agony might try the effect of some plant or grass, for the apparently instinctive practice of taking drugs is believed to exist among the lower animals. It is a fascinating subject for the speculative mind to ponder how this instinct arose, and how, as primitive man struggled upwards, a belief in the power of drugs to remedy disease originated. Perhaps in the trying out of plants as foods some knowledge of their effects was obtained—purgative, emetic, carminative—and thus certain of them were set aside for medicinal purposes. It is clear at any rate that faith in drugs, especially vegetable drugs, has been deep-seated and widespread amongst all peoples from earliest times. It is as strong in modern civilisation as it was amongst primitive men.

The subject of materia medica or medicinal agents, therefore, is one of the most ancient of medical studies. It had its foundation in observation and pure empiricism, and in the beginning was really the simple practice of medicine. At first its practical application was in the hands of women, probably because women would naturally look after the sick, but later it was transferred to specialised medicine-men. Then with the development of reason came new difficulties. One great characteristic of *Homo sapiens* is that he tends instinctively to fill up the blanks in his knowledge by having recourse to conjecture and hypothesis. In one way that is a healthy instinct, for where complete and accurate knowledge is unattainable, a working hypothesis, though wrong, may be better than no hypothesis at all. But it has obvious disadvantages. Primitive man regarded everything he could not explain as being the work of some god, and when he came to reason about the cause of disease it was perhaps not unnatural that he should explain convulsions, delirium, and disease generally, on the hypothesis that the patient was possessed of a devil or evil spirit. And so, to the simples and drugs of materia medica was added exorcism or the casting out of devils. The knowledge of disease and of the means of dealing with it gradually passed into the hands of the priest-physician. Materia medica, magic, and mystery became almost synonymous terms.

Observation, Reason, and Experience.

In medicine it took an unusually long time for men to realise that to call normal phenomena natural, and abnormal divine, introduces an absurd dualism; but gradually the conception of the divine origin of disease was discarded, to be replaced by something perhaps even worse—philosophical theory. For the Greek philosophers in their desire to frame a comprehensive theory of disease shut their eyes to fact, and with their *ὑποθέσεις* or postulates sought to explain medical phenomena by *a priori* assumptions. They wove theories of pathology without putting them to the test of experience, and on these erroneous theories was perforce based irrational treatment

In the midst of this confusion of mystery and speculation there arose the "Father of Medicine," Hippocrates, of whom it was said by Celsus that he achieved the feat of separating medicine from philosophy. He saw that actual experience and study of disease were of far greater importance than philosophical interpretations based solely on figments of the imagination, and though his conceptions of pathology were often quite erroneous, he taught the necessity of understanding the natural history of disease. He observed that though drugs were usually given to patients, recovery sometimes took place where no drug had been administered; and he deduced from that the existence of a natural spontaneous healing power within the living organism, that power of which I have already spoken—vis medicatrix naturæ. The first great step in scientific medicine, therefore, not only involved a doubt about the curative results of empirical methods of treatment, but also made an appeal to the natural laws of living organisms to effect the cure of the sick. It would be well if every student and practitioner of medicine kept that thought in the forefront of his mind. It would save him from drawing many erroneous conclusions from his therapeutic observations. Hippocrates relied more on simple regimen than on materia medica. But this expectant treatment which observes and foresees the course of disease without attempting to act directly on its progress is not wholly satisfying. It is an excellent maxim that therapeutic measures should not in any way disturb the beneficent tendencies of nature—primum non nocitur—but what is to be done if the tendencies are malign? Surely, said some of the successors of Hippocrates, it is justifiable in those circumstances to combat and to try to dominate Nature. And so the reaction to mere expectancy in therapeutics began. The fashionable Roman physician, Asclepiades, coined his unfair aphorism that Hippocratic treatment was merely a "meditation upon death." The empiricists once more held sway. But the great achievement of Hippocratic medicine stood. It substituted observation, experience, and reasoning in place of theory and magic.

Then followed the tragedy of the dark ages, and for a thousand years, while Western Europe was plunged in intellectual darkness, no great change or advance in the treatment of disease took place. In the sixteenth century, when medical research and learning once more became part of the general

* The substance of an Inaugural Address delivered in the University of Aberdeen on Oct. 20th.

activities of civilised nations, the naturalist-physicians began to take stock of their materia medica, and to write herbals which set out the botanical characteristics, external appearance, and origin of medicinal plants, together with some notes as to their value in the treatment of disease. About this time also, pharmacopœias or lists of drugs used in therapeutics began to be written, the first collection of medical recipes sanctioned by civil authority and enjoined to be used under penalties by dispensers and compounders of medicines being that of the town of Nürnberg, published in 1545.

Remedies Old and New.

I have no intention of entertaining you to an historical account of the evolution of the modern pharmacopœia, nor of attempting to excite disgust, ridicule, or amusement by giving a list of some remedies which have appeared even in comparatively recent pharmacopœias—remedies such as oil of dead men's bones, powdered worms, &c. The fact is that too much has been made of these monstrosities in the therapeutic armamentarium. When we are tempted to criticise too severely the therapeutic methods of our forefathers, we should remember that they were based on current theories of pathology, which are to the modern mind not only very crude but very curious. "Men," said Edmund Burke in sarcastic mood, "are wise with but little reflection . . . in the business of all times except their own." We smile or sneer at primitive man for his belief in a charm, in a prayer or a sacrifice to a god, or in some potion brewed in mystery by the old woman or medicine-man of his tribe. We should not forget that even to-day those of us who are irrational—and most men are irrational when they are tortured by disease or the fear of death—cling just a little to a faith in magic. We still like to think that there may be something to charm away our pain, that the deity at his grotto may heal us in a supernatural way, that the mysterious patent medicine may bring about a miraculous cure. Some of us still believe in the miracles of the faith-healer, of the nature-healer, of the layer-on of hands. Such follies and superstitions are all very natural, but if man were content to rely on them alone little progress would be made. Fortunately, throughout the ages there have been those who, following Paul's advice to the Thessalonians, have tried to "prove all things" and to "hold fast to that which is good." Their number has not been great, nor their influence until comparatively recent times marked, but they have been able to fashion the science of medicine by lopping off at least some of its effete and ridiculous branches.

We saw that at the revival of learning materia medica became allied to botany, and this alliance has persisted to recent times, for less than 50 years ago drugs were arranged according to their natural orders in all text-books of materia medica. The advance of chemistry at the beginning of last century led to a more accurate analysis of the crude remedies in use, and alkaloids and other active principles of plants came to be used in the treatment of disease. New drugs and new combinations of old drugs were introduced into practice, and toxicology or the effects of poisonous doses of drugs began to be studied on man and on animals. But all this was merely an advance in method and efficiency. It indicated no fundamental change in principle. The teaching of materia medica in the medical schools advanced but little, and up to comparatively recent times too much attention was paid to its descriptive or botanical side. There are certain drugs which every medical man ought to be able to recognise, but it must hav been a wearisome task for the student of 50 or 6 years ago, eager to learn something of the actio and uses of the drugs which he was to employ in h practice, to sit through lectures devoted mainly t a minute description of the appearance, physic characters, and preparations of those remedies.

We must not be tempted, however, to blame ou predecessors too much. Human progress, medicall as well as politically, is never uniform along a unbroken front. One science is often held up becaus the sciences ancillary to it have not progresse sufficiently far to make a general advance possibl And what medicine needed to go forward by leaps an bounds was improved education, a large developmer of the scientific spirit, and a consequent great advanc in the fundamental sciences. All this has happene since the middle of last century. Physics gave u instruments of precision hitherto undreamt o Chemistry added to our pharmacopœia a large numb of potential drugs, and also made it possible to stud the chemical changes occurring in the body; an in biology there was an amazing outburst of activit in many fields. The genius of Pasteur and Koc founded the new science of bacteriology, and revol tionised our whole outlook and therapeutic aspirations in infectious diseases. Experiment physiology, under the inspiration of Claude Bernar began to move to the forefront of scientific interes and gave to observational or Hippocratic and al to empirical medicine the powerful instrument of th experimental method, and what is of great importance, the experimental spirit. All this ha a profound effect on materia medica. It compell the pure empiricist to attempt to answer two importa questions: (1) Is there a causal relationship betwe the giving of the drug and the cure of the disease?- often a very difficult point to decide. (2) How do the remedy act, and what light does it throw on th mechanism and nature of the pathological process

Pharmacology.

This union of traditional materia medica with th experimental spirit led to the birth of modern pharm cology or pharmacodynamics, as it is sometim called. Majendie, that pitiless critic and scepti was one of the first to investigate systematically th action of remedial agents, and since then workers many parts of the world have followed his exampl and in the same spirit. At first, pharmacologic research was naturally directed towards analysi the mode of action of drugs in familiar use, and the is no question but that the increased knowledg obtained in this way led to increased accuracy the employment of drugs in the treatment of diseas and also to a better understanding of disease process themselves. Experimental pharmacology also, association with synthetic chemistry, introduced in the clinical domain many drugs of first-rate importan —amyl nitrite, chloral and its derivatives, nearly a the hypnotics and analgesics, and in more rece times, many of the hormones—adrenalin, pituitri insulin. It is beside the point to say that some of the came from the laboratory of the chemist and of th physiologist, not from the workshop of the profession pharmacologist. Those who argue in this way ha missed the significance of the whole trend of mode scientific thought—the essential unity of biologic science, especially in its relationship to medicin Every student of medicine is concerned with th reactions of living structures to the chemical an physico-chemical changes of their environment, th is, with pharmacology, biochemistry, physiology, an

pathology. It is impossible to establish boundaries between these subjects, and indeed in my view it is inadvisable to attempt to do so. But whatever we may call ourselves—physiologists, pharmacologists, pathologists, clinicians—we are first and last biologists, and we must realise that our own special subject is not so much a field as a focus of interest.

For the student of medicine there is no better connecting link between the basic and the clinical subjects than pharmacology. Consider its position in the curriculum. The student comes to it after completing his courses in anatomy and physiology, and he meets for the first time the chief weapons he is to use in his life's work. He feels that now he is making a real step in the direction of his final goal. He finds that pharmacology articulates with physiology, with pathology, and, most important of all, with clinical medicine and surgery. The function of the conducting tissue of the heart, for example, may have appeared to him merely as interesting, but now it assumes an added importance, for he learns of digitalis which acts specially on this tissue to depress its conductivity, and he begins to understand how the drug can be of supreme value in the treatment of certain pathological conditions leading to cardiac failure, and how modern research has given a rational explanation of what was at one time an "old-wife's" cure.

Divorce of Pharmacology from Therapeutics.

It is not surprising that experimental pharmacology which is so important, not only for the therapeutist but even for the physiologist and the pathologist, should have tried to raise itself more and more to the position of a pure science. But this unfortunately led to the break-up of the union of materia medica and the practice of medicine which had existed, as we have seen, since the origin of man. The pure science of pharmacology and the applied science of therapeutics became divorced. The gap between the laboratory and the clinic got wider and wider. This is a matter which has given rise in recent years to much controversy, and though it is difficult to keep clear of a natural bias, the matter demands some discussion.

The argument usually advanced to warrant the separation is that no one man in these days can follow the progress of clinical practice and of laboratory research with satisfaction to himself or profit to his students; and this argument has been carried to its logical conclusion in some of the American universities where the professor of pharmacology has no clinical knowledge, and may even have no medical qualification. Such an argument does not, however, take into account the fact I have already emphasised, that the study of medicine is the study of biological science, and that pharmacology is simply a focus of interest in that science devoted chiefly to the study of the action of drugs and remedial agents. And since, as is generally admitted, the ultimate object of pharmacological research is the healing of the sick, surely it is at least as important to study the action of remedial agents on the sick as it is to analyse their effects on healthy animals. No one will deny that there are many aspects of pharmacology which can be studied without reference to or knowledge of clinical medicine, and that great and good work has been and will be done under these circumstances. As in all other sciences, men can investigate with no ulterior motive save that of the simple acquisition of knowledge. Their work may not be immediately applicable to practical needs, but it will deepen and strengthen the foundations on which therapeutics is built. Like Saul, they may go forth to seek for asses and find a kingdom. But that does not mean that applied science should be neglected. The great Pasteur, immersed as he was in the researches which led to the greatest single change, and probably the most far-reaching one, which has ever taken place in medical theory, was constantly engaged in the solution of practical problems; and who shall say what mental stimulus he received from his practical work. Two views, diametrically opposed, have been held regarding medicine, as indeed regarding everything else worth while, since man could think at all. One is that theory is useless, that practice is the thing; the other, that practice is effete, and that the initiative has passed from the practical man to the theorist—in medicine, from the clinic to the laboratory. Both views are wrong. It is natural perhaps that much of the popular praise should fall to a man who makes an important therapeutic discovery. He is the immediate and obvious benefactor of mankind. But in the great enterprise of medicine it is vain for any special class of worker to arrogate the credit of most discoveries to his own class. It is foolish to attribute to a mere company the victory which rightly belongs to a whole army working in combination. It must never be forgotten that ideas freely current help to keep science fresh and living, and that pure science always receives stimulation and renewed vitality from its contact with practical problems. Physiology, in natural pride of its triumphs as a pure science, is apt to forget that it owes some of its greatest advances—namely, the idea of cerebral localisation and the idea of internal secretion—to its relation to medicine. How much more, then, will contact with clinical medicine give to pharmacology a fresh flow of ideas to invigorate and stimulate it! Apart altogether from such general considerations it must always be kept in mind that the great majority of the students of medicine intend to practise medicine, and are not concerned with pharmacology as a pure science; they study it to enable them to forge and to use the weapons required to counteract symptoms and cure disease. In my considered judgment, therefore, pharmacology in its widest sense can not and should not be studied exclusively either at the bedside or in the laboratory. Theory and practice must not be divorced.

Training for Medicine.

We must determine now, if we can, how our subject may best meet the needs of medical education and medical practice at the present time. From most of you society will not demand proofs of learning; it will not be interested in the physiological, anatomical, pathological, or chemical notions you may have acquired. It will want to know only if you can apply your knowledge to the treatment of disease. The whole aim and object of the medical curriculum is to teach students to treat disease rationally. It might be expected, therefore, that a great deal of attention would be paid in medical schools to the teaching of therapeutics, yet in actual fact little or no attempt is made to correlate systematic instruction in the principles and practice of rational treatment with clinical medicine. The fault lies, I think, in that the great advance which has been made in diagnostic methods during the past few decades by the application of biochemical, serological, and physical principles has taken hold of the minds of clinicians to far too great an extent. The result has been that, in the clinic, when the history and physical signs have been elicited, the diagnosis, differential

diagnosis, and prognosis discussed, and the pathological aspect of the disease fully considered, the all-important question of treatment is either ignored or is dealt with in such a perfunctory fashion that the student carries away no clear idea of the method of treating a similar case. The same applies to the clinician's attitude to therapeutical research. If his outlook is still dominated by the old views of pathology, his chief interest lies in the post-mortem room, and he regards his treatment merely as a means to placate the patient. In short, he is that pious fraud, the therapeutic nihilist. If, on the other hand, he is an enthusiast in treatment, he never fails to ascribe his good results to drugs, or vaccines, or ultra-violet radiations, or vitamins, though he has probably used so many agents in the one case that he would find it difficult to say which one had proved really valuable. And yet there is so much to be done. Each and every day in the practice of medicine an enormous amount of treatment is carried out, yet very little systematic attempt is made to determine fundamental laws, to bring to the clinique the spirit and methods of the laboratory, and to find out just what the drug is doing and how it acts. There are great difficulties in such researches, apart from the obvious difficulty of adequately controlling the experiments. But the effort would be well worth while. Even though it did not add one single positive element to therapeutics, it would render an enormous service if it helped to clear away the overgrowth of useless treatment, and let us see where we really are. Nothing is more needed in medicine than a vigorous and informed criticism, based on accurate and detailed examination of the effect of drugs and other remedial agents on patients.

Proprietary Remedies.

And that brings me to a cognate subject. The discovery of the therapeutic possibility of synthetic chemicals, patented and therefore proprietary, and the development of other products of the laboratory, vaccines, sera, endocrines, and vitamins, combined with the natural eagerness of the physician to help his patient, have led in recent years to a great deal of empirical treatment with these agents. Their origin in the scientific laboratory has been used to give a pretence of respectability to all kinds of misleading and uncritical statements in medical journals and by the profession, as well as in the trade journals devoted to their advertisement, which pour in daily on medical men. In fact, there has arisen in this country a condition of affairs not unlike that described by Sollman as existing in America in 1905. At that time, he said, the general practitioner, without the time or material for discriminating study, assailed on all sides by the laudatory literature of the advertising pages, and occasionally impressed by the fashionable consulting physician who was always looking for something new in therapeutics, was a helpless and easy victim for the skilful proprietor. I doubt if practitioners in this country are such easy victims, but the tendency is that way. A friend of mine, a general practitioner, wrote to me recently on this very subject. He complained that he and his colleagues were constantly being imposed on by attractive boosting of proprietary preparations, and he asserted that one of the clamant needs of the profession was for some authoritative statement as to how to discriminate between good and bad in drug advertisement. The American Medical Association attempted to deal with the situation by establishing the Council on Pharmacy and Chemistry. Not content with destructive criticism only, it gave attention to the constructive side. It issued a book, "New and Non-official Remedies," which is revised annually and which tries to give reliable information as to the action and uses of new drugs. In recent years the Council has taken up the logical position that the approximate value of a new drug should be determined accurately on patients as well as on animals before it is advertised to the profession. It would be too much to expect that the labours of the Council would free America from blatant advertisement and extravagant claims, but it has done good work, and the establishment of a commission along similar lines might be of advantage to this country.

But that, in my view, would not be enough. The student of to-day is the practitioner of to-morrow, and what is required more than anything is to interest him in exact therapeutic observation and experiment. He should not be kept in ignorance, as he so often is, of the medicinal or other treatment the patient is receiving. He should be required to observe for himself the effect, either immediate or remote, of remedial agents. He is usually told about these matters, but he should be encouraged to observe and to try to draw his own conclusions. He should see for himself that some diseases tend of themselves to get well, that others can be cured by therapeutic measures, that some can only be alleviated, and that certain of them in the present state of knowledge are hopeless. He should learn that treatment must be carried out according to a plan, and not in a haphazard fashion, and that each case presents in itself an interesting and important physiological and pathological experiment. In that way his critical powers will be developed, and without running the risk of falling into the pit of therapeutic nihilism, he will get an accurate knowledge of the success or partial or complete failure of therapeutic measures. It seems to me common sense that the student should have this experience before qualification rather than after, and I cannot understand why such a policy is not more generally adopted, for in a not inconsiderable experience of clinical teaching, I have found that there is nothing which interests the student more than to feel that he is taking part in the treatment of the patient. Credulity is the child of ignorance, and better teaching in therapeutics will go a long way to checking the influence of the advertising agents of new drugs, though of course it will never completely abolish it.

Education and Research.

The purport of my discourse will now be obvious. Materia medica in its widest sense—pharmacology, pharmacodynamics—call it what you will—is the science on which sound therapeutics is and always must be based. It should not be divorced from the practice of medicine. To my third year students, therefore, I propose to teach pharmacology as an applied science, always with the view to bringing it into relation with general medicine; and to final year students I intend offering a voluntary systematic course in the principles and practice of rational treatment. I hope to do more. The authorities of this university have realised that a clinical appointment is an essential adjunct to the chair of materia medica, and though my duties as extra-honorary physician to the Royal Infirmary are at present nominal, I hope that I shall soon have an opportunity of putting into practice the pedagogic principles I have preached to-day. My aim, in short, will be not only to abolish the artificial barrier which has been set up between the clinic and the laboratory, but to help to turn out students of medicine with a sound and critical first-hand knowledge of the treatment of disease.

One final word regarding the future. It has often been said that if we just knew more of the cause of disease we would be able to treat it better—that research in therapy must lag behind research as to causation. Not a bit of it! We have known the cause of tuberculosis for more than half a century, we think we know the ætiology of pneumonia, yet our method and means of curing both these diseases are sadly lacking in efficiency. They are much the same, in fact, as they were when Hippocrates laid down his regimen. On the other hand, long before the malarial parasite and quinine were dreamt of, cinchona bark was being skilfully employed in the sound and successful treatment of malaria. And to-day, though we are entirely ignorant of the real cause of rheumatic fever and pernicious anæmia, we have almost specific remedies for these diseases. Therapeutics, therefore, can advance on its own, provided new chemical substances and new biological products are placed at its disposal. In Germany, institutes of experimental therapeutics have been established, where chemist, physiologist, bacteriologist, and the experimental and clinical pharmacologist form a team for the production of new drugs and for their experimental and clinical trial. We in this country prefer not to be regimented in that way. Our genius appears to run more in the direction of individualistic effort. Yet it might be possible for the members of the different departments of our medical school to cooöperate in work which may not only advance the reputation of this ancient university, but also help in the solution of the fundamental medical problem, the prevention and cure of disease.

INTRASACRAL EPIDURAL INJECTION IN THE TREATMENT OF SCIATICA.

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Although it is the purpose of this paper to describe the results obtained in the treatment of sciatica by intrasacral epidural injection, it is necessary at the outset to examine briefly the theories that have been advanced by different writers to explain the nature and mechanism of production of sciatic pain. This preliminary review is introduced in order to emphasise the difficulty experienced in allocating the series of cases discussed in this paper to any group or subdivision other than that of *primary* or *idiopathic* sciatica, and also to determine how far one is able to regard the response to this form of treatment as throwing some light on the ætiology of sciatica.

The nomenclature adopted in the definition of the varied forms of sciatica is in a state of chaos. Most writers seem to recognise two distinct types: (1) *primary, idiopathic,* or *essential* sciatica, and (2) *secondary* or *symptomatic* sciatica. In the latter group are placed all cases in which pain in the course of the sciatic nerve results from pressure on the nerve or its roots by neoplasms situated in the pelvis or by disease occurring in the hip-joint, sacro-iliac joint, and lumbosacral vertebræ. In a large group of cases no pressure lesion can be demonstrated, either by ordinary clinical means or with the aid of special methods of investigation; these have been referred to as instances of primary or idiopathic sciatica. The true ætiology of sciatic pain in this group of cases remains obscure, and it is in the attempt to allot to them their particular cause that speculative terminology has been introduced.

Sicard [1] adopted a classification of sciaticas based on anatomical lines and, according to the site of the lesion, referred to them as *high, middle,* or *low* sciatica. In the middle and low varieties the lesion producing the neuralgia is situated in the nerve plexus or nerve trunk. The term high sciatica indicates that the lesion has its site between the posterior root ganglia and the origin of the nerve plexus. Sicard applied the term *funiculitis* to this condition, and maintained that an inflammatory lesion of the bony canal through which the nerve root passes—i.e., a *neurodocitis*—was the real cause.

Danforth and Wilson [2] expressed the opinion that sciatic pain was a symptom of disturbance in the lower lumbar region of the spine, and that the lumbosacral junction supplied the commonest site of the lesion.

Putti [3] defined sciatica as a neuralgia caused by pathological conditions of the intervertebral foramina and articulations. He regarded it as a symptom of neurodocitis and lumbarthritis, and considered that the term idiopathic sciatica should be replaced by the more precise and adequate one of *arthritic* or *vertebral* sciatica, and that in order to treat the sciatica it was necessary to treat the arthritis.

Buckley [4] has recently investigated 45 cases sent to hospital with the diagnosis of sciatica. He concluded that 27 of these were cases of *secondary* or *symptomatic* sciatica, and that the remaining 18 were examples of sciatic neuritis.

In the experience of these writers, therefore, secondary or symptomatic sciatica occurs with greater frequency than the primary or idiopathic form. The results obtained from the present investigation do not lend support to this view, but indicate that when a careful survey has been made of the history of the illness, the clinical examination of the patient, and the radiological investigation of the lumbosacral region, and when hypothesis and mere speculation as to the probable cause of the neuralgia have been excluded, the majority of cases are instances of primary or idiopathic sciatica. The fact that the true nature of the lesion in these cases has remained obscure or cryptic warrants their inclusion in this group.

The Cases and their Treatment.

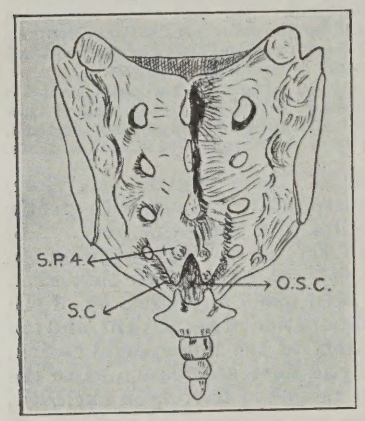
In accordance with the definition outlined in the previous paragraph, the 40 cases discussed here have been regarded as instances of primary or idiopathic sciatica. There were 21 males and 19 females. The age varied from 20 to 66, the average age being 40 years. The sciatic pain in all cases had been sudden in its onset, and had continued without intermission for periods varying from 5 days to 18 months; the average duration of symptoms was five and a half months. In all the 40 cases the neuralgia was confined to one side, and occurred in the right limb in 25 and in the left in 15. The pain, which was most severe in the thigh, radiated in the distribution of the sciatic nerve. There was no history of strain or injury, and no clinical evidence of disease in the lumbosacral part of the spine, and radiological examination in 15 cases failed to reveal any pathological changes in this region. Stretching of the affected sciatic nerve following flexion at the hip with extension of the knee produced pain (Lasègue's sign) in 39 cases. Tenderness on deep pressure over the nerve trunk was elicited in 30 cases; the degree of tenderness is indicated in the tables. The ankle-jerk was absent in eight and diminished in six cases. Septic teeth were found in nine cases. Large and hypertrophied tonsils were present in two cases. Treatment in the form of internal administration of drugs and external application of counter-irritants had been adopted in all the cases, but had proved of no avail. Massage, ionisation, electrical therapy, hot baths, stretching the nerve under general anæsthesia, injections of oxygen or saline along the course of the nerve, and splinting the affected limb were forms of treatment which had

been applied to some of the cases, but had produced no amelioration of the symptoms.

TECHNIQUE OF INTRASACRAL EPIDURAL INJECTION.

The patient lies on the affected side with thighs and legs slightly flexed. The triangular outlet of the sacral canal is then defined in the following way. The tip of the coccyx is first located, and the palpating finger is made to slide upwards towards the sacrum for a distance of about 2 inches. At this point on either side of the mid-line the prominent cornua of the sacrum can be readily felt in most cases. Above the cornua the imperfect laminæ of the fifth sacral vertebra are found to converge to form the apex of the triangular outlet of the sacral canal. The mid-point between the two sacral cornua marks the site of the injection (Fig. 1), and an arrow pointing to this spot should be outlined on the skin by means of a grease pencil. The skin and the track of the needle is then infiltrated with 2 per cent. novocain, and sufficient time is allowed for the production of efficient local anæsthesia. A lumbar puncture needle is then introduced into the sacral canal. After penetration of the skin the needle should assume the direction indicated by arrow A in Fig. 2 in order to transfix the sheet of tough fibrous tissue that roofs over the outlet at this site. Immediately the point of the needle penetrates this tough sheet its direction should be changed as indicated by arrow B in Fig. 2; it is then advanced for an inch. A syringe is applied to the needle, and an attempt is made to withdraw the piston for a short distance. If cerebro-spinal fluid is aspirated the needle has been advanced too far and must be withdrawn a short distance. This precaution is necessary in order to ensure that the point of the needle lies in the sacral canal outside the spinal theca. The sterile solution, previously warmed to body temperature, is then introduced slowly by means of a 25 c.cm. syringe. The operation throughout must be conducted under aseptic precautions. The patient should rest quietly on the affected side for half an hour, and remain recumbent for 24 hours after the injection.

FIG. 1.

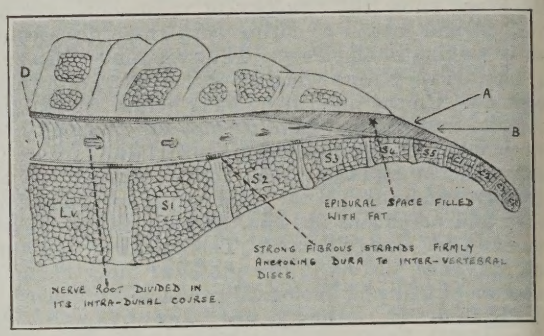


Showing the anatomical boundaries of the outlet of the sacral canal (O.S.C.). S.P.4 = spinous process of 4th sacral vertebra. S.C. = sacral cornu.

SUBJECTIVE SYMPTOMS DURING THE INJECTION.

All the patients experienced a feeling of distension or discomfort, but few of actual pain in the sacral region at the time of the injection. These symptoms became aggravated towards the end of the operation, when considerable pressure was required in the introduction of the fluid. Headache, which was present in a few cases, was never severe. Many of the patients experienced much pain in the distribution of the affected sciatic nerve, and as this symptom appeared to indicate that the nerve was being stretched it was thought that its presence in any particular case predicted a favourable result. Further experience did not confirm this view, but showed that this sign did not appreciably influence the prognosis. Where over 100 c.cm. of 1 per cent. solution of novocain had been injected, the patients occasionally experienced abnormal sensations or paræsthesiæ, such as formication. A few said that they had found it difficult to control a desire to shout or scream. These sensations, although uncomfortable, were never serious, and usually lasted for only ten minutes after the injection. Alarming symptoms occurred in only one instance, wher cyanosis, opisthotonos, unconsciousness, and incon tinence of urine and fæces followed the injection o

FIG. 2.



Sagittal section of lumbo-sacral region. D = dura.

120 c.cm. of 2 per cent. solution of novocain; co sciousness returned within half an hour; sphinct control was re-established 12 hours later, and recove was complete.

RESULTS OF TREATMENT.

To facilitate the study of the results, the 40 cas are placed in four groups, as indicated in the table Cure resulted in 22, or 61·1 per cent. Improveme occurred in 5, or 13·9 per cent. The treatment fail

TABLE I.—*Showing the Results of Treatment by Intr sacral Epidural Injection in 40 Cases of Sciatica.*

—	Cure.		Patients not traced.		No relief.	Improved.	Im- prov temp rari but relaps
	After 1st inj.	After 2nd inj.	Immediate and complete relief.	Immediate improvement.			
Cases and percentage.	20	2	3	1	2 (5·6) %	5 (13·9) %	7 (19·4)
	61·1 %						

to relieve the symptoms in 14 cases, or 25 per ce Of four patients who could not be traced, immedia and complete relief from the sciatic pain had follow the injection in three, while improvement had occurr in the fourth (Table I.).

The 22 cases classified as "cured" experienc immediate and complete relief from the sciatic pa and remained free from symptoms on resumpti of their customary occupation and mode of li In 20 cases the cure followed one injection; and two it followed a second. Fuller details concerni the cases included in this group are outlined Table II.

The five "improved" cases were able to ret to their work within a week of the injection. Th reported that they had been "cured" of their sciati but since they occasionally experienced slight p they have been classified as cases showing impro ment rather than cure. Further particulars of th cases are given in Table III.

The details in nine cases where this method treatment proved of no avail are outlined in Tab IV. and V. In seven of these, although tempor improvement followed the injection, the pain retur

TABLE II.—*Details of 22 Cases where Cure of Sciatica Resulted from Intrasacral Epidural Injection.*

Sex.	Age.	Duration of symptoms.	Side affected.	Tenderness over sciatic nerve.	Ankle-jerk.	Nature and quantity of solution injected.	Interval between inj. and last inquiry.
F.	50	10 w.	Left.	Present.	Present.	30 c.cm. 1% nov. 50 ,, saline.	2½ y.
M.	25	3 m.	Right	,,	,,	60 ,, 1% nov.	3½ y.
M.	42	4 m.	Left.	,,	Absent.	20 ,, ,, ,, 70 ,, saline.	3 y.
F.	20	18 m.	,,	Slight.	Dim.	20 ,, 1% nov. 60 ,, saline.	3 y.
F.	47	3 m.	,,	Absent.	Present.	70 ,, ,,	6 m.
F.	46	5 m.	,,	,,	,,	20 ,, 1% nov. 80 ,, saline.	16 m.
M.	47	3 m.	Right	Marked.	,,	80 ,, ,,	2 y.
F.	36	6 m.	Left.	Absent.	,,	125 ,, 1% nov.	5 m.
M.	33	18 m.	,,	,,	,,	(1) 80 ,, saline. (2) 140 ,, ,,	1 m.
F.	55	6 m.	Right	,,	,,	120 ,, 2% nov.	2 y.
F.	52	12 m.	Left.	Slight.	,,	120 ,, ,, ,,	8 m.
M.	36	4 m.	Right	,,	,,	70 ,, ,, ,,	14 m.
M.	42	4 m.	,,	Absent.	,,	(1) 120 ,, 1% ,, (2) 65 ,, ,, ,,	12 m.
M.	45	3 m.	Left.	Present.	Dim.	20 ,, ,, ,, 85 ,, saline.	16 m.
M.	39	12 m.	Right	Absent.	Present.	20 ,, 1% nov. 80 ,, saline.	7 m.
F.	49	8 w.	Left.	Marked.	,,	20 ,, 1% nov. 60 ,, saline.	2 y.
M.	33	4 w.	,,	Absent.	Absent.	100 ,, 1% nov.	12 m.
F.	36	2 m.	Right	Present.	Present.	30 ,, ,, ,, 100 ,, saline.	2½ y.
M.	30	12 m.	Left.	Absent.	Absent.	20 ,, 1% nov. 80 ,, saline.	12 m.
F.	39	3 m.	Right	Present.	Present.	80 ,, ,,	21 m.
F.	33	6 m.	Left.	,,	,,	100 ,, 1% nov.	3 m.
F.	33	7 m.	Right	,,	Dim.	145 ,, ,, ,,	2 m.

y. = years; w. = weeks; m. = months.
Dim. = diminished; nov. = novocain.

TABLE III.—*Details of Five Cases where Improvement Occurred After Intrasacral Epidural Injection.*

Sex.	Age.	Duration of symptoms.	Side affected.	Tenderness over Sciatic nerve.	Ankle-jerk.	Nature and quantity of solution injected.	Nature and duration of modified symptoms after inj.
F.	39	7 w.	Right	Present.	Absent.	100 c.cm. 1% nov.	Slight, 4 m.
M.	29	6 w.	,,	Slight.	,,	20 ,, ,, ,, 60 ,, saline.	Slight, 3 m.
F.	66	6 m.	,,	Present.	Present.	100 ,, 1% nov.	Slight, 3 w.
M.	26	6 m.	,,	,,	Absent.	(1) 100 ,, ,, ,, (2) ,, ,, ,, ,,	Slight, 12 m*.
F.	59	3 w.	,,	,,	Present.	120 ,, ,, ,,	Slight, 10 m.†

* "Pain more like rheumatism."
† Periodic attacks of slight pain for 10 months.

TABLE IV.—*Details of Seven Cases where Temporary Relief from Sciatica was Followed by a Relapse.*

Sex.	Age.	Duration of symptoms.	Side affected.	Tenderness over sciatic nerve.	Ankle-jerk.	Nature and quantity of solution injected.	Period of relief.	Further duration of symptoms.
F.	43	6 m.	R.	Pres.	Abs.	20 c.cm. 1% nov. 100 ,, saline. 2nd inject. ,,	1 d. 14 d.	— 14 d.
F.	50	4 m.	,,	,,	Pres.	30 c.cm. 1% nov. 100 ,, saline.	1 d.	3 m.
F.	51	7 w.	L.	,,	Dim.	20 ,, 1% nov. 100 ,, saline.	3 d.	2 m.
F.	21	7 w.	R.	Slight	Pres.	(1) 85 ,, 1% nov. (2) 100 ,, ,, ,,	None. 1 w.	12 m.
F.	35	8 m.	,,	Pres.	,,	(1) 120 ,, ,, ,, (2) 100 ,, ,, ,,	2 w. 1 m.	6 m.
F.	53	10 m.	,,	,,	Dim.	20 ,, ,, ,, 100 ,, saline.	1 w.	—
F.	35	5 d.	,,	,,	Pres.	2nd inject. ,, 60 c.cm. ,,	2 w. 1 w.	3 m. 3 m.

R. = right; L. = left; Abs. = absent; Pres. = present.

after an interval of relief which varied from one day to a month.

TABLE V.—*Details of Two Cases where Intrasacral Epidural Injection Provided no Relief from the Sciatica.*

Sex.	Age.	Duration of symptoms.	Side affected.	Tenderness over sciatic nerve.	Ankle-jerk.	Nature and quantity of solution injected.	Further Duration of symptoms.
M.	46	2 m.	Right	Present.	Absent.	120 c.cm. 1% nov.	3 m.
F.	30	10 m.	Left.	Absent.	Present.	20 ,, ,, ,, 100 ,, saline.	8 m.*

* Still present 8 months later.

QUANTITY AND NATURE OF THE FLUID INJECTED.

Between 60 c.cm. and 145 c.cm. of fluid had been introduced into the sacral canal in those cases where cure of the sciatica followed epidural injection; the average quantity injected was 98 c.cm. An average of 100 c.cm. was used in the cases where improvement of the symptoms followed the injection. In the cases where the injection failed to alleviate the sciatic pain, an average of 110 c.cm. of fluid had been used. These figures, together with those recorded in the tables, suggest that success does not depend on the quantity of fluid introduced. The amount of fluid recommended for injection is from 60 c.cm. to 80 c.cm. It was rare to experience any degree of resistance to the introduction of the solution until the quantity injected had exceeded 60 c.cm.

Forty-seven injections were given in the 40 cases discussed in this paper, the injection being repeated in seven cases. Normal saline was used in six cases, 1 per cent. novocain in 17, and 2 per cent. novocain in 3 cases; in 21 cases the first 20 c.cm. to 30 c.cm. of the fluid injected consisted of 1 per cent. novocain, and this was followed by normal saline. A study of the results indicates that relief from sciatic pain is in no way dependent on the nature of the solution introduced. Of six cases where normal saline was used, immediate and complete cure followed the injection in five.

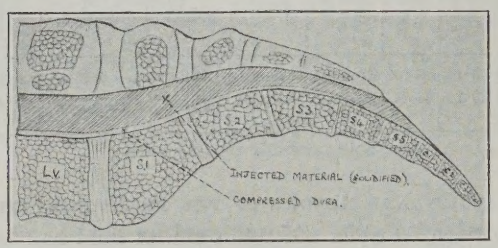
How Pain is Relieved.

From clinical observation it was difficult to see the exact manner in which intrasacral epidural injection cured sciatica. The fact that some of the patients experienced pain in the course of the affected sciatic nerve during the injection, and also that normal saline appeared to be as efficacious as novocain solution in affording relief from sciatic pain, seemed to indicate that the introduction of fluid into the sacral canal in some way produced stretching of the sciatic nerve trunk or its roots. In the attempt to elucidate its mode of action the following investigations were conducted.

Expt. 1.—All the nerves emerging from the lumbosacral region in a cadaver were divided, and the sacrum and lower three lumbar vertebræ were removed and placed in 4 per cent. solution of formalin for 12 hours. The anatomical relationship of the lower part of the spinal theca and the nerve roots which join to form the sciatic nerve was studied in sagittal and transverse sections of the lumbosacral vertebræ. The appearances of the sections are shown in Figs. 2 and 4. The nerve roots have been divided immediately before they pass through the dural sheath. The nerve roots in their extradural course and proximal to their passage into the sacral foramina were found to measure from 1 in. to 1½ in. in length. The epidural space, which is filled with fat, is prolonged upwards in the spinal canal and invests the dural covering of the spinal cord. The ventral or anterior compartment is traversed by firm fibrous bands which bind the theca to the intervertebral discs, so that some difficulty was experienced in completely separating

the dura from its attachment or anchorage to the anterior wall of the spinal canal. In its posterior and lateral aspects, however, there is no anchoring of the dura to the bony wall, so that it was possible to separate it and to enlarge the space at the expense of displacing the dural tube and its contents forwards. This study of the sacral space and its spinal prolongation has facilitated the true interpretation

FIG. 3.

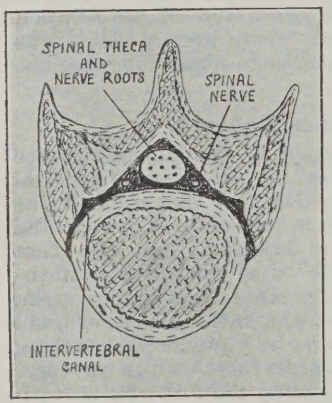


Sagittal section of the lumbo-sacral region, showing compression and anterior displacement of the dural tube and its contents following intrasacral epidural injection.

of the results obtained from intrasacral epidural injection in cases of sciatica.

Expt. 2.—It then became necessary to study the manner in which these anatomical relations became disturbed after the introduction of fluid under pressure into the sacral space; 20 g. of gelatin were dissolved in 100 c.cm. of water to which 0·5 g. of methylene-blue had been added. This mixture, when heated, could be forced through a standard lumbar puncture needle; it solidified on cooling; 50 c.cm. of this medium was injected into the sacral space of a fresh cadaver, and later an examination was made of the lumbo-sacral vertebræ in sagittal section, and of the upper part of the fifth lumbar vertebra in transverse section. The appearances are shown in Figs. 3 and 5. It was found that the injected material had separated the dura from its normal close anatomical contact with the posterior and lateral walls of the spinal canal, and had displaced it forwards and inwards. The anterior segment of the dura, in virtue of the anchoring fibres described in the previous section, was found to have preserved its close relationship with the posterior surface of the vertebral bodies. This compression of the dural tube and its contents is readily appreciated by comparing Fig. 2 with Fig. 3 and Fig. 4 with Fig. 5. These changes within the spinal canal were traced as far as the first lumbar vertebra. In cases where 100 c.cm. of the material had been injected the dye could be traced as high as the upper cervical region.

FIG. 4.



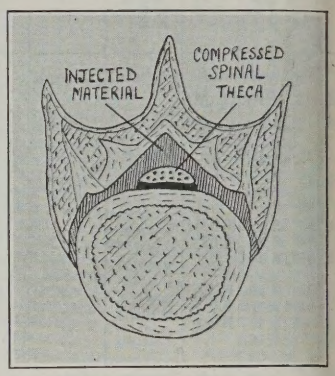
Transverse section through the body of the fifth lumbar vertebra.

The injected material, however, does not remain confined to the spinal canal, and the solidified gelatin dye mixture was found to have been forced along the vertebral foramina, forming sleeve-like projections along the course of the emerging nerves. This escape of the injected material occurs quite early during the injection, and commences when only 10 c.cm. of fluid have been introduced. It is possible that this contributes to the relief of sciatica in those cases where the pathological lesion is believed to be a neurodocitis.

Expt. 3.—The lumbosacral vertebræ were exposed in the cadaver and the dura was divided at the level of the fourth lumbar vertebra. Water was then injected into the sacral canal through the sacrococcygeal opening, and the displacement of the dura was carefully noted. Not only did the compression of the dural sheath forwards and inwards produce a stretching of the nerve roots, but also the pressure exerted by the water displaced the dural tube upwards, and in this way further augmented the stretching effect. This upward shift of the posterior part of the dural sheath and the cauda equina measured 1/10 in.

Expt. 4.—A lumbar puncture needle connected with a manometer was inserted in the space between the fourth and fifth lumbar spines in a case of sciatica where treatment by intrasacral epidural injection was in progress. The effect of the injection on the cerebro-spinal fluid pressure was then noted, and the results obtained have been plotted and illustrated by means of a chart (Fig. 6). The quantity of fluid introduced into the sacral space has been indicated on the abscissa, and the pressure on the ordinate. The continuous lines represent the rise in the pressure during each separate introduction of 2 or 4 c.cm. of normal saline into the sacral canal. The discontinuous lines represent the fall in pressure which followed each injection; this fall in pressure occurred gradually, and the resting level was only reached after an average interval of two minutes. When 30 c.cm. had been introduced into the canal the pressure remained stationary, oscillation of the fluid in the manometer ceased, and the further injection of 50 c.cm. of saline did not influence the reading. This sudden interruption in the manometric reading can be explained by the fact that the introduction of 30 c.cm. of saline into the epidural sacral space had obliterated the subdural space up to the level of the lumbar puncture needle.

FIG. 5.



Transverse section through the body of the fifth lumbar vertebra, showing the anterior displacement and compression of the spinal theca and its contents after intrasacral epidural injection of the dye.

FIG. 6.

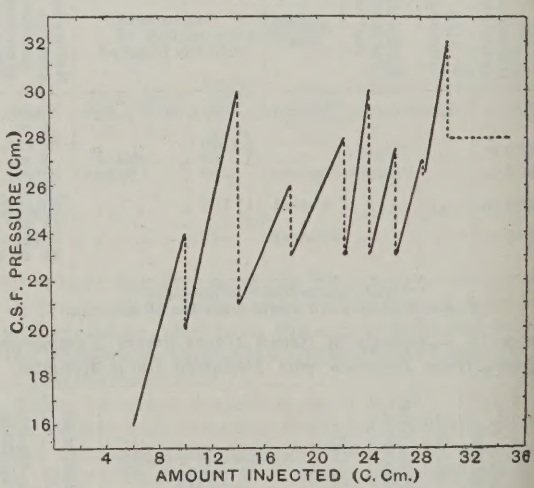


Chart to show the variation in the cerebro-spinal fluid pressure during intrasacral epidural injections.

Conclusions.

1. If mere theoretical conjecture is excluded in the differential diagnosis of the various types of sciatica it is found that the majority of cases fall into the group known as *primary, idiopathic* or *essential* sciatica.

2. Intrasacral epidural injection in the treatment of primary sciatica produces immediate and complete relief or cure in over 60 per cent. of the cases. A further 13 per cent. derive considerable benefit from the treatment.

3. Clinical results have shown that it is unnecessary to inject more than 80 c.cm. of fluid, whilst the experimental data indicate that the desired effect can be obtained from the introduction of only 30 c.cm.

4. No special advantage is derived from the use of novocain solution, and normal saline appears to be equally efficacious.

5. A mechanical stretching of the nerve roots that go to form the sciatic nerve appears to be the important factor in the cure of sciatica by intrasacral epidural injection. This conception of the modus operandi is supported by three main facts, namely: (1) Many of the patients experienced pain in the course of the affected sciatic nerve during the injection. (2) Introduction of saline into the sacral canal appeared to be as efficacious as novocain solution in alleviating the sciatic pain. (3) Visible stretching of the nerve roots was observed in the cadaver during the injection.

I am indebted to Dr. Theodore Thompson and Prof. A. W. M. Ellis for allowing me to include in my series cases admitted under their care at the London Hospital. I also wish to thank Prof. Hubert M. Turnbull for permitting me to use the material in his department for the purpose of conducting some of the experiments cited in this paper.

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OBSERVATIONS ON THE METABOLISM OF HUMAN MAMMARY CARCINOMA.

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THE metabolic studies of Warburg and his collaborators on cancerous and other tissues have shown that the two fundamental processes occurring in cells are: (1) *respiration*—i.e., the consumption of atmospheric oxygen, the resulting oxidation of organic metabolites, and the liberation of carbon dioxide; and (2) *glycolysis*—i.e., the cleavage of the carbohydrate molecule without participation of atmospheric oxygen, leading to the production of two molecules of lactic acid from one molecule of carbohydrate.

These two types of chemical change are not independent reactions, but are related by a more or less quantitative coupling, so that an increase in the value of respiration results in a corresponding diminution in the extent of aerobic glycolysis. In most normal tissues the aerobic glycolysis is small or zero. Under anaerobic conditions the amount of glycolysis is largely dependent on the properties of growth and degeneration of the tissue, so that embryonic tissues, for example, have a high anaerobic glycolysis.

Warburg's methods have been applied particularly to a study of tumours, and the earlier work, which was done principally on transplanted rat tumours, suggested that tumours might be classified metabolically on the basis of the relation of the respiration to the glycolysis. It was thought that in tumours the respiration was too small to prevent lactic acid production. More recent work on spontaneous and transplanted mice tumours (Murphy and Hawkins, 1925; Crabtree 1929) has shown that this is not generally true. In addition to this difficulty, apart from tumours certain granulomatous overgrowths (Crabtree 1929, Dickens and Šimer 1930), as well as the retina and mammalian erythrocytes are characterised by the production of a considerable amount of aerobic lactic acid. It appears, therefore, that there is some defect in respiration in all these tissues (Warburg 1929), which defect has been shown to lie in the oxidation of carbohydrate. (Dickens and Šimer, 1930.)

It is, therefore, clear that aerobic glycolysis is not a specific feature of tumours. There is, however, a need at present for more experimental observations on comparable series of tumours to show if any generalisations may be arrived at as to the relation of metabolism to the histological and clinical details of such a series of cases. In the present paper the results obtained in a series of cases of human mammary carcinoma studied by the above methods are reported; this material comprises tumours of varying degrees of cellularity, differing in type and arrangement, and with different degrees and types of connective tissue response. The metabolic investigations were, therefore, combined with a histological study of the tumours. In addition to the tumour tissue, two portions of breast showing intraductal epithelial hyperplasia were examined, and also one case of chronic cystic mastitis and a portion of unchanged breast tissue near a growth.

Method and Results.

The breasts to be examined were obtained immediately after surgical removal. In each case a suitable portion of tumour was selected, and the metabolic investigations at once begun. As a rule, the time intervening between the removal of the specimen from the patient and the commencement of preparation of the material did not exceed 5–10 minutes, and readings were, as a rule, begun under 40 minutes after removal by the surgeon.

The improved method of Warburg (1924) was used in all experiments. The medium contained sodium bicarbonate ($2{\cdot}5 \times 10^{-2}$ molar) and 0·2 per cent. glucose. The gas mixture with which the vessels were filled consisted of 5 per cent. CO_2 in O_2 or N_2 as required. Ringer's solution was used in all experiments with the exception of numbers 1 and 2, in which inactivated horse serum containing 0·25 per cent. glucose was used. As far as possible duplicate estimations were made, and the uniformity of the tissue was controlled by changing over the large and small volumes of fluid in the two vessels used for the measurement of aerobic metabolism and continuing the measurement under these reversed conditions. If the two sets of readings were not substantially the same, the experiment was discarded, since this showed that the tissue was not sufficiently uniform.

Histological Investigation.—After the thin slices of the selected portion of the tumour had been obtained for the metabolic estimations, the remainder was fixed and blocked out for microscopical section, the surface cut being that from which the slices for the metabolic examination had been removed. In this way, a microscopical field was obtained of tissue immediately adjacent to that examined metabolically. The character and arrangement of the actual carcinomatous tissue was noted, and also

the degree and type of connective tissue response. As an index of the proportion of carcinoma to connective tissues, the number of carcinoma cells in 200 standard fields of 1/40 sq. mm. was counted, and an average per field thus obtained which was known as the "carcinoma cellularity index." In the case of the connective tissues, the amount of fibroblastic and elastic tissue reaction was noted, and the degree of small round-celled infiltration.

Results.—The main clinical and pathological features of the 20 cases examined, together with the metabolic findings, are given in the Table.

Discussion.

As will be seen from the above examples, the metabolic reactions of human mammary carcinoma correspond on the whole with those of animal tumours in showing a large amount of aerobic lactic acid production. Whereas, however, with the transplantable animal tumours one is dealing with homogeneous material almost entirely composed of tumour cells, in human material the issue is complicated by the varying cellularity of different tumours. The technical difficulties, therefore, in dealing with human tumours are greater and the figures obtained show a wider variation.

Of the factors which influence the figures, the most obvious is the relative amount of growth to stroma. Thus, in Case 6, which was a very fibrous growth with a carcinoma cellularity index of only 10, extremely small figures were obtained. On the other hand, the cases with a high carcinoma cell content such as specimens No. 7, 8, 12, and 15, with indices respectively of 78, 100, 63, and 166, show comparatively high figures.

In some cases, however, a high value of respiration and glycolysis is associated with a low carcinoma cellularity index, the most marked example of which is Case 5 B. This was a secondary axillary mass, and reference to the Table will show how out of proportion its metabolic figures are to its low carcinoma cellularity index of 8. The histological picture in this case showed extensive small round inflammatory celled infiltration around the actual carcinoma cells, and these inflammatory cells must have influenced the metabolic measurements appreciably. No. 11 is another case associated with round-celled infiltration which gives higher figures than would be expected from the number of cancer cells present. It is obvious, therefore, that such small round-celled infiltration in a tumour must be taken into account in any attempt to interpret the results quantitatively. The presence of proliferating fibrous tissue cells probably also introduces similar complications.

The majority of the cases showed a positive U-value—i.e., the respiration was small compared with the glycolysis (Warburg, 1927), but four cases—numbers 1, 9, 14 A, and 16—gave a negative U-value. In all these cases the respiration was high compared with the glycolysis, and the results are similar to those observed in spontaneous mouse tumours (Murphy and Hawkins, Crabtree). The system of classification whereby a tissue showing a positive U-value was considered to be a tumour has now been definitely abandoned by its author.

RESULTS OF CLINICAL, HISTOLOGICAL, AND METABOLIC EXAMINATION OF HUMAN MAMMARY CARCINOMA.

Spec. No.	Age in yrs.	History, growth, &c.	Diameter in inches.	Cellular index (cancer cells only).	Connective tissues.	Lymphatic glands.	Metabolism.			
							Respn. Q_{O_2}.	Glycolysis. Aerobic $Q^{O_2}_{C_2}$.	Glycolysis. Anaerobic $Q^{N_2}_{C_2}$.	U.
1	65	1½ yrs.; small slowly growing tumour.	—	47	Elastic +.	Not invaded.	11	13	19	−3
2	42	2 years.	2½	17	Fib. +.	Invaded.	2	2	7	+3
3	70	Peau d'orange.	1½	32	—	,,	2	5	11	+7
4A	—	2 years.	¾	48	—	,,	?0·6	5	10	?+9
B		Neighbouring intraductal epithelial hyperplasia.		33	—	—	0·4	1·1	1·8	+1
5A	53	3 yrs.; recent rapid growth.	2	10	S.R.C. + +.	Invaded.	1·5	7	10	+7
B		Axillary secondary.	3½	8	S.R.C. + +.	—	5	14	15	+5
6	65	5 mths.	2	10	Elastic +.	Invaded.	V.S.	V.S.	V.S.	—
7	72	2 yrs.	1	78	S.R.C. +. Fib. +.	,,	12	4	24	0
8	82	15 mths.; X rays given.	4	100	S.R.C. +.	,,	9	14	22	+4
9	77	7 mths.	2	19	Elastic + Fib. +.	,,	1·2	0·2	1·6	−0·8
10	54	Several years' history; large ulcerated growth.	—	33	S.R.C. +.	Not sectioned.	1·7	2·5	3·8	+0·4
11	49	18 mths.	¾	22	S.R.C. +.	,,	3·5	4·5	14	+7
12	49	2 mths.	1	63	Patches of S.R.C.	Invaded.	4·5	12	14	+5
13	50	2 yrs.; precarcinomatous mastitis.	—	13	S.R.C. +.	Not invaded.	S.	S.	5	—
14A	52	3 mths.	2	13	S.R.C. +.	,,	8	3	6	−10
B		Surrounding breast tissue.	—	—	Much F.t.	—	1	10	—	—
15A	69	5 mths.	1½	166	Almost pure tumour.	Not invaded.	4	9	15	+7
B		Gland.	—	—	—	—	V.S.	V.S.	0·7	—
16	73	3 mths.	1½ × 2	39	Fib. +.	Not removed.	7	7·5	11	−3
17	56	1 yr.	2 × 1¾	44	,,	Invaded.	8	9	22	+6
18A	—	4 mths.	1	38	S.R.C. +.	Not invaded.	2·5	5	10	+5
B		Surrounding breast tissue.	—	6	Mostly F.t.	—	V.S.	V.S. (ca. 0·2–0·4).	V.S.	—
19	—	Chronic cystic mastitis.	—	4	,, ,,	—	V.S.	V.S.	V.S.	—
20	42	History unreliable.	3	40	—	Invaded.	1·7	2·9	7·1	+4

Explanation of Table.—Connective tissues: Fib. = fibroblast. F.t. = fibrous tissue. S.R.C. = small round inflammatory cell infiltration. Respiration: Q_{O_2} = no. of c.mm. O_2 respired by 1 mg. (dry wt.) tissue per hour. Glycolysis: $Q^{O_2}_{CO_2}$ = no. c.mm. CO_2 liberated from bicarbonate by 1 mg. (dry wt.) tissue per hour under aerobic conditions. $Q^{N_2}_{CO_2}$ = no. c.mm. CO_2 liberated from bicarbonate by 1 mg. (dry wt.) tissue per hour under anaerobic conditions. V.S. = very small. U-value: excess fermentation or $U = Q^{N_2}_{CO_2} - 2Q_{O_2}$ (see Warburg 1927).

In the few cases in which portions of breast other than those invaded with growth—4B, 14B, 18B—were examined, the figures were too small to allow of accurate measurement. This was also the case with the chronic cystic mastitis specimen—No. 19. In all these cases the proportion of cells to fibrous stroma was small.

CONCLUSIONS.

The above study shows that the metabolic reactions of human mammary carcinoma are similar on the whole to those of the more homogeneous transplanted animal tumours. The high aerobic glycolysis found in transplanted animal tumours is also found in these human tumours, but the results are more variable in the latter. The two chief histological factors which can be correlated with this variability are (1) the amount of actual carcinomatous tissue present, (2) the degree of inflammatory cell stromal reaction. Owing to the great variations in metabolism associated with these factors, it is at present impossible to attempt to correlate the clinical with the metabolic findings.

We wish to make acknowledgement for a grant from the British Empire Cancer Campaign (D. H. P.) and a whole-time grant from the Medical Research Council (F. D) which have enabled us to carry out this work.

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ACCESSORY LOBE OF THE AZYGOS VEIN.

A REVIEW AND A CASE.

BY G. GREGORY KAYNE, M.D., M.R.C.P. LOND.,
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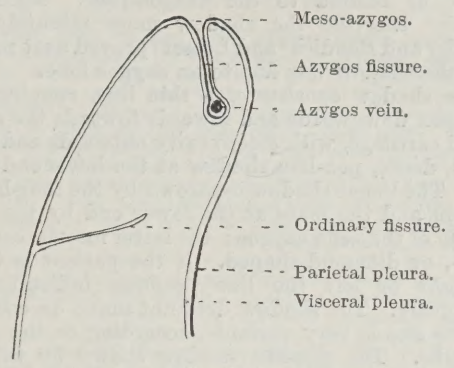
ANOMALIES in the gross structure of the lungs, as shown by variations in the number of lobes and fissures, are common. Fissures may be incomplete or absent or, on the other hand, the lung may be divided into as many as nine lobes (Scammon[22]). All these conditions are caused by a faulty branching of the bronchial tree.

A different and rare type of anomaly is that associated with an abnormal position of the azygos vein. Normally the azygos vein runs upwards in the posterior mediastinum behind the right root of the lung and then curves forwards over the root to enter the posterior aspect of the superior vena cava immediately before the latter vessel pierces the pericardium. In the cases described here the vein is situated more laterally—behind the right lung. To reach the superior vena cava it makes a much larger curve, cutting deeply into the right superior lobe. It thus marks off an accessory lobe in the internal portion of the superior lobe. This is the "azygos lobe," more accurately termed the "accessory lobe of the azygos vein."* The azygos vein joins the superior vena cava on its lateral surface and at a much higher level than normally, almost at the level of the left innominate vein (Hjelm and Hultén[3]). As the vein sinks into the substance of the lung to reach the superior vena cava it carries with it a double fold of the parietal pleura, so that the septum, at the bottom of which the vein lies, is formed by four layers of pleura. This is shown in Fig. 1, where an ordinary septum is

FIG. 1.



After Keijser.

depicted for comparison. Hjelm and Hultén have applied the term "mesoazygos" to the triangular fold of pleura thus formed at the apex of the lung. Grüber (quoted by H. Müller[20]) has described four cases and H. Müller one case in which there was no reduplication of the parietal pleura in the fissure. Müller explained his case as due to herniation of the lung through the mediastinal pleura in the normal recess between the azygos vein and the spine. Leeser[6] made a histological examination of his post-mortem specimen, but could not demonstrate the four layers of pleura in the fissure.

The abnormality was first described by Wrisberg in 1777,† and the lobe has, therefore, often been referred to as the "lobe of Wrisberg." Since that time the condition has been noted by several anatomists and pathologists. Stibbe[23] (1919) collected 23 cases from the literature. Three further cases were reported by Cairney[15] in 1923. More recently, Hjelm and Hultén[3] and Bendick and Wessler[2] have each described two cases examined post mortem, and Leeser[6] has similarly published one case. Evidence that the condition is due to an abnormality of the bronchial tree and that the accessory lobe really belongs to the apex was given by Geddes[18] (1910) and Holtby[19] (1915), who studied the branching of the eparterial bronchus. Further, Wessler and Bendick injected the trachea of one of their post-mortem specimens with lipiodol and then showed by radiography that the azygos lobe was supplied from the eparterial bronchus and not by a separate branch from the right main bronchus.

Two opposite views on the ætiology of this condition have been brought forward. Cleland[16] (1870) suggested a very early fœtal adhesion of the lung to the chest wall, preventing the vena azygos from following its normal course. There is no evidence for the existence of such adhesions. Orth[21] (1887), on the other hand, believes the main feature to be the developmental anomaly of the azygos vein. In support of his view may be quoted (1) the fact that the insertion of the vena azygos into the superior vena cava is abnormal, and (2) the fact that Bluntschli[14] (1905) demonstrated the azygos vein already situated

* The term "azygos lobe" has also been used to name a small, pyramidal accessory lobe, which makes its appearance on the *lower* part of the mediastinal surface of the right lung. Such a lobe is constant in certain mammals.[17] For the sake of brevity the name "azygos lobe" will be employed in this article in place of the more cumbersome "accessory lobe of the azygos vein."

† His case also demonstrated an accessory lobe on the left side, due to an abnormality of the left superior intercostal vein.

laterally in a 10·5 mm. embryo. Suess[11] suggests that heredity may play a part.

Radiological Appearances.

Wessler and Jaches,[13] in 1923, described a "unique" linear shadow which they occasionally saw in films of the upper lobe of the right lung. They could not explain it, but in 1927 G. Velde[12] suggested that it might be related to the azygos lobe. Hjelm and Hultén[3] describe the shadow more minutely, and Wessler and Bendick[2] and Leeser[6] proved post mortem that the shadow was due to an azygos lobe.

The shadow consists of a thin line, running from the apex downwards and inwards towards the second costal cartilage, with a convexity outwards and a very small, dense, pea-like shadow at the lower end of the line. The linear shadow is thrown by the four-layered septum and the mass at the lower end by the cross-section of the vena azygos; the latter may be comma-, bean-, or diamond-shaped. If the patient is turned to right or left the line becomes indistinct and disappears. The shadow does not move on coughing and its size is very variable, according to the size of the lobe. The pea-like shadow shown by the vein may be absent or difficult to define when it is close to hilar shadows or to mottling.

Frequency.

In the anatomical section 31 post-mortem cases were traced in the literature. In the appended table are analysed the figures given by authors since 1927 in their reports on cases recognised radiologically.

Author.	Cases.	Films examined.	Per-centage.
Velde	5	Not stated.	—
Hjelm and Hultén	13	3,000	0·43
Mather and Coope* [8]	5	3,000	0·16
Suess	1	120	0·83
Litten [7]	6	8,000 (1½ years).	0·07
Stoloff [10]	6 (children).	Not stated.	—
Leeser	12 "at least"	,, ,,	—
Illig [4]	1	17,000 (7 years).	—
,,	12	1 year (1928).	—
Keijser [6]	10	3,500	0·28
Minehart [9]	13	About 10,000.	0·13
Wessler and Bendick	"About" 50.	15 years.	—
Bársony and Koppenstein [1]	Not stated.	Not stated.	
Cited by Hänish	11	,, ,,	—
above Révész	5	,, ,,	—

* 3271 films examined, but in 271 there was extensive mottling in the upper lobe and they were therefore excluded.

It is thus difficult to estimate the frequency of the condition, but it is obviously rare.

Pathology.

The azygos lobe is liable to the same pathological changes as other parts of the lung. A very small lobe may be due to atelectasis. H. Müller [20] reported a case in which pressure from a mass of leukæmic glands caused marked bronchiectasis of the whole azygos lobe; Keijser mentions one of tuberculous infiltration in the azygos lobe only. Other cases recorded have shown effusion in the fissure and infiltration of the lobe.

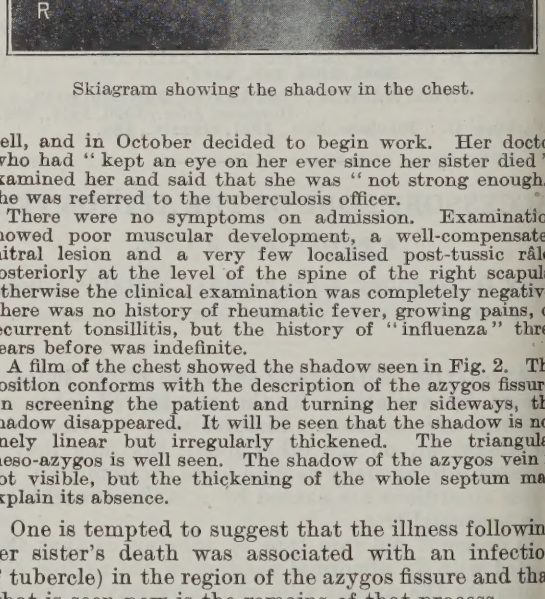
The shadow may be confused with normal lung markings, local pleural thickening or a fibrous band in the lung. The shadow of the vein may be mistaken for a hilar node or a node resulting from fibrosed infiltration. If the parenchyma does not "light up" well there may be difficulty in distinguishing an azygos lobe from widening of the mediastinum due to tuberculous adenitis (especially in children), tumour, dermoid, persistent thymus or retro-sternal goitre, or even idiopathic dilatation of the œsophagus.[1]

ILLUSTRATIVE CASE.

The following case is of particular interest as i shows a pathological thickening of the azygos septum

A girl, aged 16, was admitted to the North Wales Sana torium on Jan. 24th, 1930. She had had measles at the ag of 10 and "flu" at the age of 13. A sister had died o pulmonary tuberculosis in January, 1929. The patient, wh had lived with the sister in the same house during the whol of the latter's illness, had been quite well until January, 1929 when she had a "nervous breakdown." She "did not lool well" and lost weight. There was no cough. She remaine away from school for three months; improved considerably and returned to school until August, 1929. She remaine

FIG. 2.



Skiagram showing the shadow in the chest.

well, and in October decided to begin work. Her docto (who had "kept an eye on her ever since her sister died" examined her and said that she was "not strong enough." She was referred to the tuberculosis officer.

There were no symptoms on admission. Examinatio showed poor muscular development, a well-compensate mitral lesion and a very few localised post-tussic râle posteriorly at the level of the spine of the right scapula Otherwise the clinical examination was completely negative There was no history of rheumatic fever, growing pains, o recurrent tonsillitis, but the history of "influenza" thre years before was indefinite.

A film of the chest showed the shadow seen in Fig. 2. Th position conforms with the description of the azygos fissure On screening the patient and turning her sideways, th shadow disappeared. It will be seen that the shadow is no finely linear but irregularly thickened. The triangula meso-azygos is well seen. The shadow of the azygos vein i not visible, but the thickening of the whole septum ma explain its absence.

One is tempted to suggest that the illness followin her sister's death was associated with an infectio (? tubercle) in the region of the azygos fissure and tha what is seen now is the remains of that process.

I am indebted to Dr. D. A. Powell, principal medica officer, King Edward VII. Welsh National Memorial Associa tion, and to Dr. D. W. Fenwick Jones, medical superinten dent, North Wales Sanatorium, for permission to publis the notes and X ray photograph of the case.

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(*Continued at foot of opposite page.*)

CLINICAL AND LABORATORY NOTES

THE UREA CONTENT OF THE CEREBRO-SPINAL FLUID IN STATUS EPILEPTICUS.

A NOTE ON FOUR CASES.

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MEDICAL SUPERINTENDENT.

THE following are notes of four cases observed during status epilepticus.

CASE 1, a female, aged 13½ years, had a family history of "eccentricity" on the father's side. Her elder sister was an epileptic. She had had scarlet fever when aged 8 and after first fit when aged 10, and had had major fits, "absences" and periods of severe mental abnormality. When admitted to Lingfield in August, 1927, she was aged 10½ and had no sign of organic disease in the central nervous system or elsewhere. During the first two months after admission she had frequent attacks, both major and minor, often followed by very abnormal mental conditions. With grs. 30 of bromide daily, the attacks settled down to two majors a month and a few momentary "absences"; there was corresponding mental improvement and the intelligence quotient rose from 74 to 85.

Early in June, 1930, she complained of a cough and looked ill. She had lost 12 lb. in a month. There were no signs in the chest, but she ate little and seemed to lose interest in everything. She complained of headache and giddiness. All reflexes were normal and equal; the pupils were equal and reacted to light. Ophthalmoscopy showed the left disc rather redder than the right, but nothing else abnormal. The urine contained no sugar or albumin. On June 12th pyrexia appeared, and the temperature rose steadily until the night of the 17th, when it was 105·4°, just before death. The pulse-rate rose with the temperature from 120 to 160, and the respirations, which were shallow and irregular throughout, from 28 to 60 and over. During this period the patient was mostly comatose, but at times there was some degree of consciousness, and she was capable of slight response. The limbs were flaccid and the tendon reflexes absent, but there was a good deal of twitching of the eyelids and face muscles, and occasionally of the limbs. Oscillatory eye movements were almost continuous. Urine was passed at regular intervals throughout. During the last 24 hours there were signs of œdema of the lungs.

Permission was not obtained for a post-mortem. Lumbar puncture on June 17th gave a clear fluid under normal pressure. There was no increase in cells, and no organisms were seen in direct films. Cultures were sterile on all media. The fluid showed an increase in the urea and glucose contents:—

Protein	15 mg. per 100 c.cm.
Chlorides	725 " " " "
Urea	70 " " " "
Glucose	127 " " " "

CASE 2, a male, aged 7 years and 11 months, did not walk or talk until he was 2 years old. He had measles when aged 4 years. His first fit at 6½ may have been caused by fright. Besides frequent isolated attacks, he had five attacks in which convulsions continued for several hours. He was treated with gr. 1 of luminal and grs. 8 of bromide a day, but "not much improvement" was reported. On admission on May 22nd, 1930, his general physique was good and nothing abnormal was found in the central nervous system, heart, lungs or kidneys. He was restless, talkative, and mischievous. During the first few weeks he had a few attacks of petit mal.

On June 18th he had very violent major convulsions lasting for 2½ hours. He was treated by repeated enemata, and one dose of luminal sodium, grs. 3, hypodermically. His pulse was rapid and very weak, and his temperature rose to 103·8°. He never completely regained consciousness and died in coma on July 5th—i.e., 17 days later. During the intervening period there was continual pyrexia. For the first four days the temperature averaged 100°; later it was higher, occasionally reaching 103° and rarely dropping below 100°. The pulse-rate ranged from 130 to 160. The respiration-rate varied with the pulse, and only at the very end exceeded 40. Minor attacks varied from slight opening of the mouth, followed by moaning, to rigidity of the right or left arm and leg, accompanied by protrusion of the tongue and dilatation of the pupils. Constant side-to-side movements of the eyes were observed, with occasional fixation to the right, to the left or centrally. In the early stages there was some left internal strabismus. The pupils were equal and reacted to light, and ophthalmoscopy showed nothing abnormal. Except during the attacks, the limbs were flaccid and the tendon reflexes exaggerated and equal. A double extensor plantar response was obtained once after a series of attacks. The bladder emptied itself at intervals and was never unduly distended. A specimen of urine obtained the day before death showed a trace of albumin. At first the patient was able to swallow a little fluid, but later was fed per rectum and then through a nasal catheter. Life was undoubtedly prolonged by strophanthin given hypodermically. Repeated examination of the lungs was negative.

Post-mortem examination.—There was general emaciation, some fluid in both pleuræ, a small infarct in the lower lobe of the right lung, and a small patch of bronchopneumonia at the left base. The heart-muscle was flabby and rather pale. The liver showed an early nutmeg pattern. The kidneys were normal. A very large amount of fluid escaped on opening the dura. Sections from the cortex of the motor area and cerebellum, and through the pons and medulla, showed no histological abnormality. The cerebro-spinal fluid, taken by lumbar puncture on June 27th—i.e., nine days after the status and eight days before death—showed no raised pressure or cellular increase. The chloride, urea, and glucose contents were increased:—

Protein	15 mg. per 100 c.cm.
Chlorides	936 " " " "
Urea	172 " " " "
Glucose	157 " " " "

CASE 3, a male, aged 35, had his first fit at the age of 8. His father had died of phthisis, his mother of bronchopneumonia, and both grandfathers of asthma. He was admitted to Lingfield in January, 1906, aged 11. There was then no sign of organic disease in the central nervous system or elsewhere. He was liable to frequent typical major fits, latterly averaging rather over one a week. Usually these occurred singly, but occasionally as many as six were recorded in 24 hours. He took grs. 2 of luminal sodium daily for the last seven years of his life. His general physique was poor and progressive mental deterioration occurred.

On July 20th, 1930, he had 9 major fits; he had 4 more on the 21st, 12 on the 22nd, 37 on the 23rd, and 36 on the 24th. After this, coma alternated with periods of restlessness and shouting, and he died on the 27th. Pyrexia did not begin until after the last fit, but the temperature then rose steadily, reaching a maximum of 108·4° shortly before death. The pulse- and respiration-rates rose with the temperature. There were no localising signs of trouble in the central nervous system. While fits were occurring, a total of 6 c.cm. of somnifaine was given intramuscularly. The bladder emptied itself at intervals throughout, and a specimen of urine towards the end showed a little albumin and some blood.

Post-mortem examination.—The lungs showed congestion and an early stage of pneumonia at both bases. There was no excess of fluid in the brain. The liver showed no histological abnormality, except very slight intercellular fatty degeneration. Both kidneys showed a marked degree of cloudy swelling of the tubules. This was comparatively recent and there was nothing to suggest any form of subacute or chronic nephritis. It would, however, account for diminution of function. The Malpighian bodies of

DR. GREGORY KAYNE: REFERENCES.

(*Continued from previous page.*)

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the spleen were much smaller than normal and blurred in outline; in parts they were difficult to distinguish from the splenic pulp. The pulp itself was scattered throughout with recent and old hæmorrhages and also leucocytic infiltration, mainly polynuclear in type. Thrombosis of some of the smaller veins was evident. The endothelial cells lining the pulpar sinuses were scanty and nowhere in proliferation. The fibrous tissue framework of the spleen was normal.

The cortex of the motor areas showed no histological abnormality. Lumbar puncture on July 25th showed a clear fluid under normal pressure, with no cytological or bacteriological abnormality. A marked rise in the glucose and a slight increase in the urea contents were present:—

Protein	20 mg. per 100 c.cm.
Chlorides	725 ,, ,, ,, ,,
Urea	38·52 ,, ,, ,, ,,
Glucose	118 ,, ,, ,, ,,

CASE 4, a male, aged 27, had his first fit when aged 7. It was supposed to have followed a shock. He had major attacks every two or three weeks. He was admitted to Lingfield in November, 1921, aged 18. A trace of albumin was present on admission, but otherwise there was no sign of organic disease in the central nervous system or elsewhere. After admission he was subject to a large and increasing number of major and minor attacks and to serial major fits; later, attacks of true status became increasingly common, and he deteriorated mentally and physically.

On August 20th, 1930, he had 46 major fits in a period of two hours, without regaining consciousness. The temperature rose to 101·4° and he was obviously very ill. Treatment consisted of washing out the rectum and the administration of 3½ c.cm. of somnifaine intramuscularly and grs. 4 of luminal sodium hypodermically. One hour after the fits had stopped lumbar puncture was performed, and a clear fluid obtained, under no great increase of pressure. At the same time a sample of blood was taken from a vein. A high leucocytosis was found:—

Polymorphonuclear leucocytes	78 per cent.
Large lymphocytes	5 ,, ,,
Small lymphocytes	5 ,, ,,
Hyalines	1 ,, ,,
Eosinophils	1 ,, ,,
Myelocyte group	10 ,, ,,

The blood-urea was 32·74 mg. per 100 c.cm., and the blood-sugar, 0·092 per cent. The cerebro-spinal fluid was clear without clot, there were 2 lymphocytes per c.mm. and no organisms. The urea was a little low:—

Protein	15 mg. per 100 c.cm.
Chlorides	748·8 ,, ,, ,, ,,
Sugar	71·5 ,, ,, ,, ,,
Urea	15·4 ,, ,, ,, ,,

DISCUSSION.

The principal interest of these cases is the high urea and glucose content of the cerebro-spinal fluid in the first three. The urea is particularly increased in the first two cases: 70 and 172 mg. per 100 c.cm. There is no reason to suppose that there was a uræmic element and in no instance was there evidence of suppression of urine. Case 3 was a straightforward case of coma following a large number of fits in a very long-standing case of epilepsy. In such a period of coma a terminal pneumonia would be a common event. In Case 2 the epilepsy was of only 18 months' duration and was characterised by periodic severe attacks of status epilepticus; a fatal termination during or following one of these attacks was to be expected. Case 1 is certainly more unusual. The pronounced loss of weight and progressive lack of interest deepening into coma, with rising temperature, pulse- and respiration-rates conform pretty closely to a series of events described by Collier [1] as status epilepticus without the fits, though in this case there was a good deal of intermittent muscle twitching, which was indicative of some active epileptic process.

The three cases in which the urea content was high all ended fatally. The fourth case had a severe status which did not end fatally, and the urea content was normal. One would infer, therefore, that a raised urea content is of grave import.

Laurès and Gascard [2] found a high urea content in cerebro-spinal fluid withdrawn by lumbar puncture immediately after a fit in six cases. Similar estimations made during inter-fit periods gave much lower figures in each of the cases. So far as we know, Laurès and Gascard's work has not been repeated. Patterson and Levi [3] found that the urea content of both blood and cerebro-spinal fluid in epileptics was within normal limits, but no mention is made of the time-relation of their estimations to fits. Goodall [4] found the nitrogen content of both blood and cerebro-spinal fluid a little raised. His cases were on a standard diet, and estimations were made two hours after seizures and during the inter-fit period, but no difference was observed in the figures obtained at these times.

The matter would appear to be one worth further investigation.

We desire to express our thanks to Dr. A. Knyvett Gordon, medical superintendent of the Virol Pathological Research Laboratories, for all the pathological reports on these cases.

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A CASE OF "PERITHELIOMA" OF FASCIAL ORIGIN

WITH A DIRECT ANTECEDENT HISTORY OF TRAUMA.

BY T. VALENTINE COOPER, M.R.C.S. ENG.,

ASSISTANT PATHOLOGIST OF THE WESTMINSTER HOSPITAL ANNEXE

THE tumour in this case is interesting because of its unusual histological appearance and because of its close relationship to a previous injury.

The patient, a female, aged 58, attended hospital in September, 1929, complaining of a mass in front of her arm at the level of the elbow-joint.

History.—In May, 1929, the patient was struck by the fall of a clothes airer. A lump appeared immediately after the injury and the patient says it was about the size of a hen's egg. She was able to use the arm, but subsequently consulted a doctor on account of inability to supinate her forearm and a sensation of "pins and needles" in the forearm and hand. She was treated with hot fomentations, but as the lump and symptoms failed to disappear she came to hospital, where the casualty officer incised the mass under the impression that it was an unabsorbed hæmatoma. No fluid of any kind was found and the patient was admitted to the ward.

She was apparently a healthy woman and had not lost weight. In her left arm was a large mass, the size and shape of a pear (base downwards), situated just above and internal to the midpoint of the antecubital fossa. A small line of incision was present and appeared healthy. The mass was movable in the long axis of the limb but firmly fixed to transverse movement. Numbness and anæsthesia were present over the distribution of the ulnar nerve in the hand, and touch was only just perceptible over the median areas. There was marked wasting of the thenar, hypothenar and interosseous muscles and all finer movements of the hand were grossly limited. She had difficulty in making a fist and flexion was almost absent in two fingers on the ulnar side. No glands were discoverable in the axilla or root of the neck. Wassermann reaction negative. X ray examination showed a mass with no bony involvement.

On Nov. 28th, 1929, a piece of the mass was removed under general anæsthesia, and examined by frozen section, which showed a mass of fibrous tissue containing a number of islets of actively proliferating cells. A preliminary diagnosis of fibrosarcoma was made and the arm was therefore amputated.

The patient made a good recovery and is till now (October, 1930) without symptoms. The amputated arm was subsequently dissected out by myself, and Mr. Michael Perkins made the accompaning diagram before the parts had been separated for preservation.

The diagram (Fig. 1) is self-explanatory, but the following details must be added: 1. The biceps and triceps muscles adjacent to the tumour were densely

infiltrated by it to a depth of about 2 inches. The brachialis anticus was free. 2. The median nerve passed through the mass and the internal cutaneous nerve divided in it, but both were easily separable and

FIG. 1.

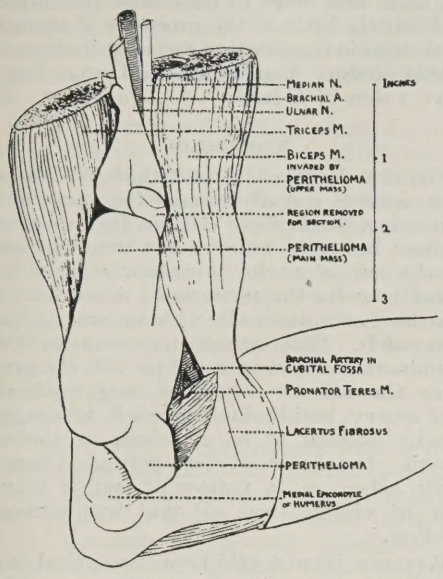


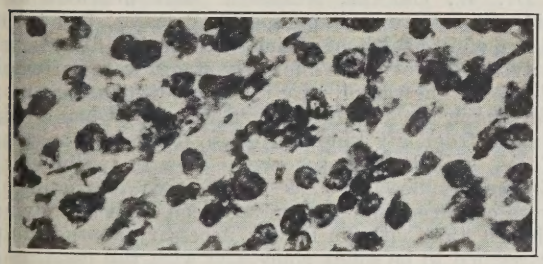
Diagram showing anatomical relationships of tumour.

appeared only to be involved by pressure. 3. The brachial artery and venæ comites, although passing through the tumour, were freely definable on dissection. 4. The mass was readily removed from the underlying bone. From these macroscopic details it would appear that the tumour had its origin in the fascial intermuscular sheaths or septa.

HISTOLOGY.

Varying appearances are presented by adjacent sections—i.e.: 1. One section (Fig. 2) has the appearance of a round-celled sarcoma with no unusual features beyond evidence of great activity. 2. The other section is extremely interesting, for it shows the

FIG. 2.

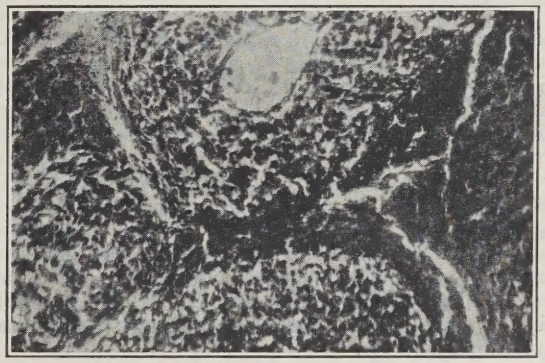


Photomicrograph (high power) showing diffuse sarcomatous area.

remarkable perivascular structure seen in Fig. 3 where the growth appears lobulated, each entity having a central blood-vessel surrounded by a wide ring of tumour cells. The vessels are more fully formed and appear to be small arteries, and the cells themselves are less embryonic in type in that they are smaller, stain better, and show fewer mitotic figures. The individual lobules are rendered obvious by their involvement by fibrous tissue and tumour debris. 3. Still another portion of this section shows masses of spindle-shaped cells and seems to be intermediate between these two previous types.

This tumour has been classified as a perithelioma in accordance with current teaching, although on further investigation it seems probable that such a classification rests on very insecure and unscientific foundations. The term "perithelioma" suggests that the condition is in some ways similar to endothelioma—i.e., to postulate "perithelioma" is first to assume perithelium.[1 2 3] Eberth[3] claimed to have demonstrated this tissue in connexion with vessels of the pia mater, but he appears to have failed to convince the sceptical that the appearances he described are not due to perivascular "lymphatics" the existence of which is well known. Roussy,[4 5] in 1911, wrote a long critical review of this subject in connexion with a tumour of the kidney. He states that in his opinion the term "perithelioma" has

FIG. 3.



Photomicrograph (low power) showing peritheliomatous arrangement.

found its way into pathological nomenclature on illegitimate grounds and without adequate investigation. He considers that tumours with such an appearance as this assume it as a result of normal anatomical structure or of peculiarity of their vascular supply, and that a peritheliomatous arrangement is secondary to other factors and not due to a primary origin from unproven perithelium. He classifies tumours of this type under three headings: 1. Cases where the appearance is solely due to normal anatomical structure—e.g., carotid body. 2. Cases due to a neoplasm of the endothelium of perivascular "lymphatics"—e.g., pia mater; for these cases he suggests the title endothelio-lymphangioma." 3. Cases where the appearance is explicable on accidental grounds and is due to hæmorrhage and necrosis emphasising certain areas of growth round the vessels.

For this last type I venture to suggest the expression "perivascular sarcoma"; although this gives a definite indication of the histological appearance, it does not produce confusion regarding the site and mode of origin.

In conclusion, I have to convey my acknowledgements and thanks to Mr. Rock Carling, under whose care the case came, and to Dr. J. A. Braxton Hicks, Director of the John Burford Carlill Laboratories, Westminster Hospital, for permission to use the pathological material.

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MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE.

SECTION OF EPIDEMIOLOGY AND STATE MEDICINE.

AT a meeting of this Section, held on Nov. 28th, with Prof. MAJOR GREENWOOD in the chair, a discussion on

Food as a Preventive of Disease

was opened by Dr. J. M. HAMILL. Well-being, he said, was dependent on two factors, heredity and environment, and of these heredity played a part which was often under-estimated. The most intimate and powerful of all environmental influences was food. By means of proper food an individual's hereditary equipment could be developed to greater advantage than by any other environmental means. The body, when properly fed and well nourished, had extraordinary powers of resistance to disease. The incidence of tuberculosis in a community appeared to be closely correlated with the food-supply, diminishing when the supply was ample, and increasing when the quantity or quality of the diet was inadequate. Troops could withstand great hardships when rations were plentiful and suited to their needs. During the Middle Ages the relationship between famine and pestilence was well understood. It was not a simple matter to say with certainty what was sufficient and suitable food, or when a diet might be regarded as completely satisfactory, but variety of the right kind would, in most cases, go a long way towards ensuring adequacy.

Inadequate diet conduced to maldevelopment and lack of resistance to disease. Specific instances were rickets, defective teeth, scurvy, beri-beri, pellagra, goitre, and a peculiar form of ophthalmia. These diseases were, moreover, only the advanced stages in a long train of disordered metabolic activity which in its earlier stages produced effects so slight as to elude all means of detection at present available. Most of these disorders resulted from deficiencies in the diet, that is, were due to negative factors, but in the production of rickets a positive factor contained in cereals might also play a part. A correct diet depended not only upon the presence of the necessary constituents, but upon their proper balance; adequacy in respect of one essential constituent might be converted into inadequacy when the balance in respect of some other constituents of the diet was altered. It was possible, however, to ensure a satisfactory diet for all practical purposes by relatively simple means if certain foods such as milk and green vegetables were prominent.

Another aspect of nutrition was the damage which might be done to important constituents of food as a result of processes which food might undergo in its preparation for consumption. An obvious example was the destruction of the antiscorbutic vitamin by drying or heating. Another instance might be the destruction of the colouring matter of flour by bleaching. This colouring matter was carotene, which would seem to be a precursor of vitamin A, and it might be that in certain circumstances the body could rely upon this carotene for an important proportion of its vitamin-A supply. The treatment of fruit by hydrogen cyanide for the destruction of insect life exerted an inimical effect upon the living cells of the fruit, and impairment of nutritive value could not be said to be excluded. Biological research tended more and more to emphasise the importance of the infinitely little in the processes of metabolism. Slight changes in composition resulting from manipulation might produce changes out of all proportion in the nutritive value of a food.

DISCUSSION.

Sir GEORGE BUCHANAN said that with regard to growing children and adolescents there was no doubt that vitamins, particularly vitamin D, were necessary and it was better to have excess than not enough; but in the case of adults on ordinary mixed diet, he wondered how far the presence of a certain amount, more or less, of a particular vitamin was an essential thing to watch. Was it vitally important to have such a discrimination of diet as would provide the particular vitamins the absence of which might conceivably produce scurvy, beri-beri, or rickets? An exaggerated importance seemed to be attached, in the case of the adult, to the need for getting vitamins in quantity, when, as a matter of fact, a very small amount of vitamin was all that was necessary to metabolism.

Sir WILLIAM HAMER said he was sceptical of a good deal of the work on vitamins until the experience of the war. That experience was very arresting. The ordinary members of the public were able in various ways to supplement the strict rations, but the people in institutions who had no such opportunities exhibited various effects of deprivation. In the big fever hospitals it had been the practice for many years to give margarine instead of butter. Ought that to be permitted?

Dr. KINGSTON BARTON said that 50 years ago rickets was regarded as due to excess of starch. All the children suffering from rickets seen in private practice in those days had been stuffed with bread, under-cooked flour, and the various patent foods of the period. Some of the physicians in those days showed that starch if boiled, cooked, or converted into dextrin could be made much less harmful for children.

Dr. W. CRAMER remarked that deficient diet did not merely produce specific diseases, but a long chain of ill-health of which the specific disease was only the last event. The early stages were extremely elusive. The reason why these conditions were more obvious in the case of children was that when a child was ill from any kind of disease it stopped growing. These specific diseases were due to pathological changes. So far as his own experiments were concerned he had never been able to convince himself that vitamin D was necessary for the adult; it seemed to be solely concerned with the ossification of bone.

Dr. THOMAS CARNWATH said that the main result of modern scientific research into matters of food had been to justify traditional practice. He recalled, in his own early days in the west of Ireland, seeing the labourers whose normal diet consisted of potatoes, butter-milk, and perhaps sometimes a little tea and pork, but they were fine strapping fellows nevertheless. When, however, they came over to help in the English harvest they were overfed with protein, and it took them a couple of months to recover. The condition of life, Dr. Carnwath added, were becoming more and

more artificial, and the question was whether the community was modifying its dietetic habits to correct the evils inherent in these changes. It was there, perhaps, that the scientific man could give assistance. It was only by careful and intensive investigation of diets that it was possible to ascertain what the food habits of different sections of the people were, and in what respect they were defective; having ascertained that, it might be possible to graft on the slight modifications necessary to bring them into conformity with scientific principles.

Dr. S. A. MONCKTON COPEMAN commented on the changes in the views on dietetics which had taken place within recent times. Was it not possible that there were one or two other factors of importance in addition to vitamins, for example, the æsthetics of nutrition? There was not the slightest doubt that if a person enjoyed his food he was all the more likely to benefit from it. Many of the diseases of adult life might be connected with the over-ingestion of vitamins, particularly of animal origin. The consumption of watercress, which contained various vitamins, was urged by Xenophon upon the Persians—another instance of the wisdom of the past.

Dr. H. C. CORRY MANN thought that in the past insufficient attention had been directed to diet in the prevention of disease. He pointed out how greatly of recent years the health of London children had improved, although the housing conditions in the London slums remained the same. Two food modifications had been responsible for this betterment—namely, the use of pasteurised milk, and the fact that there was now available a large supply of fruit, such as the orange and the apple, throughout the year. Summer diarrhœa and abdominal tuberculosis had almost disappeared. He advocated strongly the pasteurisation of milk. If pasteurisation were properly performed, scurvy would not be seen, and there would be a normal increase of growth rate. He also stressed the importance of water. He believed water to be very important because it allowed the necessary alkaline basis to be kept in suspension in the tissue fluids.

Dr. H. S. STANNUS said that in many of the so-called deficiency diseases the symptoms were positive, not negative; they were produced by the presence of something, not by the absence of something else. He was convinced that pellagra was not a deficiency disease. It was due to the action of a toxin, and was unmasked in the absence of the vitamin. The same was true, he believed, of rickets and of beri-beri.

Fleet-Surgeon W. E. HOME referred to the recent publication in Germany of some research carried out in Hamburg, where it was found that the diet of many of the working people was poor in the winter, and especially towards the end of the winter. The death-rate had two maximums, one in December and one in March. It had also been established that infectious diseases were less likely to occur in the families of people who had gardens.

Dr. J. D. ROLLESTON remarked on the absence of any authoritative information as to the vitamin content of wine and alcoholic liquors of which so much was made.

The PRESIDENT, in summing up, said that in a country like this, which was not self-supporting, and would starve on its own resources in a short while, we did not receive the food we liked, but the food we were forced to purchase through existing commercial conditions.

SECTION OF ORTHOPÆDICS.

AT a meeting of this Section held on Dec. 2nd the chair was taken by the President, Mr. P. JENNER VERRALL. Dr. L. BÖHLER spoke on the treatment in Vienna of

Fractures of the Upper Extremity.

He showed slides and cinematograph films illustrating his methods. He recommended local anæsthesia for all fractures; it was particularly valuable in compound fractures. It was sufficient to inject 20 c.cm. of 2 per cent. novocain into the hæmatoma, as this spread the anæsthetic into all the tissues. He had injected over 5000 cases and had never seen infection. The anæsthesia lasted about two hours, thus allowing for a second reduction and fixation if the first proved unsatisfactory under X rays; if necessary the injection could be repeated. Dr. Böhler also recommended Cramer's wire splinting for most cases. It formed the basis of the "aeroplane" splint for fracture of the middle third of the humerus. This was very difficult to fix, but when it was properly fixed the patient was free from pain and could wear it for six or eight weeks. It could not be applied satisfactorily under general anæsthesia. After two weeks the patient could use his hand and forearm and even move his shoulder muscles, while still on the splint, and after ten weeks recovery would be complete.

Fractures of the lower third of the humerus showed angulation and overlap. If the overlap was not reduced by traction there was a risk of nipping the brachial artery between the upper fragment and the coronoid process. Supination always increased the angulation, and the result might be musculo-spiral palsy, but pronation corrected it. The arm was therefore put up in plaster in right-angled flexion and pronation, and then fixed in an aeroplane splint with an extension device. After ten weeks all joints would be free and the muscles strong. The aeroplane splint was also the best application for fracture of the neck of the scapula.

For fracture of the clavicle he used an apparatus which held the arm away from the chest by an axillary pad, but did not press the elbow to the chest—a practice which brought a danger of pressure on vessels or nerves. This apparatus left the arm quite free, and overcame the difficulty of keeping the fragments reduced while healing took place. Recovery was complete in four weeks. If there was a recalcitrant middle fragment a secondary shoulder strap could be used to hold it in place. Even fracture-dislocation of the shoulder-joint should be treated by closed methods. Dr. Böhler demonstrated how the head could be reduced by alternate lateral pulling and upward pushing; the arm was then treated on an aeroplane splint with extension.

In myositis ossificans it was important, he said, not to operate too early, and the bone must be removed together with its periosteum.

THE FOREARM AND HAND.

For the reduction of severe forearm fractures, with both bones broken and displaced, the brachial plexus should be injected with novocain. Counter-extension was obtained by passing a loop of webbing round the upper arm, blocking the loop open to prevent pressure on the limb, and fastening its ends to the wall or door-handle. The fingers were then painted with mastisol and covered with a light gauze bandage. On this an assistant took his grip and exerted a very strong slow pull. When reduction was effected

rustless wire was drilled through both bones at their upper and lower ends—still under traction—and the arm was put up in plaster, flexed and pronated. Small volar and dorsal rods were placed in the interosseous space, and after the application of the circular bandage these were pressed home. Small lock screws in the plaster held the wires, and the arm was put on an aeroplane splint for two or three days to prevent circulatory disturbances. In more than 40 cases Dr. Böhler had seen no infection; he also used this wire-drilling method for complicated fractures of the carpus and lower end of the forearm. It was important to remember, he said, that bony union never occurred, in complete transverse fractures with displacement, in less than eight weeks. His method of treating pseudarthrosis was by drilling grooves at the ends of the bones; it differed from the similar process described in the *British Journal of Surgery* in 1914 in that the drilling was usually done subcutaneously.

For difficult fractures of the lower end of the radius a similar method was used; it was very important that the assistant should maintain continuous traction while the fixation was applied, and that he should have something against which to brace his foot so that it did not slip. For simple Colles's fracture only gauze bandaging and a splint were used. Active movements began as soon as the cast was set, even after very severe injuries; patients could dress themselves, make their beds, knit, and cook three days after the injury, and these natural activities had great therapeutic value. Two weeks after removal of the splint recovery should be perfect.

A fracture of the little finger (first phalanx) was put up in a U-shaped wire splint fastened to the wrist by plaster; the finger was attached to the wire in hyperextension by adhesive strapping, and the fracture reduced by gradual bending of the wire. Fractures of the scaphoid always united if properly fixed for an adequate period—six weeks. These injuries were seldom fixed for sufficient periods. Often the central fragment was deprived of its circulation by the fracture, and the re-establishment of its blood supply sometimes demanded months of fixation, but the patient could go on working during this time if his hand was in plaster in slight dorsiflexion. Every time he closed his fingers he axially compressed the scaphoid, which helped the treatment. Dr. Böhler never removed the scaphoid, as the function of the hand did not seem to be much improved by operation. Dislocation of the semilunar bone could be reduced by strong traction in recent cases, but older cases could be treated in an extension apparatus with pins through forearm and metacarpus. In these old cases the gap which the semilunar should occupy closed up and must be re-opened. Similar methods were applied to other dislocations round the wrist. Compound fractures of the fingers were treated by closure of the skin only and a wire extension on the uncovered finger; exposure to air prevented maceration and infection, the serum and blood forming a dry crust which protected the skin. If a dressing were put on the serum and blood soaked it, infection followed.

DISCUSSION.

Mr. E. G. SLESINGER mentioned the heavily-infected compound fracture when it came too late for primary suture. He had found in Gallipoli that the more maggots there were in a wound the better the end result, and that Dakin's solution dissolved protein. Nature's method was to supply maggots to eat the dead tissue, and the deliberate use of her method had given good results. After four days the maggots could be gently scraped away from a clea granulating wound.

Mr. C. H. BROOMHEAD said that teamwork wa the secret of Dr. Böhler's success, and we had much t learn from him. The position he used for fracture of the humerus was a great advance. He asked hov to treat separated epiphysis. He thought the menta state of the patient covered with maggots wa regrettable. Dr. Böhler had not a masseur in hi clinic; often the injudicious masseur did more harn than good. The patient was the best indicator of th movements suitable for him.

Mr. J. P. HOSFORD said that what had mos impressed him in Dr. Böhler's clinic was the absenc of general anæsthesia and of massage. He had see remarkable results with local anæsthesia. Earl movement saved subsequent stiffness, but was onl possible with a perfectly fitting splint. He had give up massage for fractures of the upper end of th humerus and lower end of the radius, allowing th patient to move about in a plaster cast. It wa remarkable what good movements could be obtained

Mr. MCCRAE AITKIN regretted the absence of Si Robert Jones, who had long ago preached length an continuity of treatment. As Dr. Böhler had said true principles never changed, but each man mad his own technique.

Mr. G. R. GIRDLESTONE asked if the hairs came o with the plaster.

Mr. W. H. OGILVIE asked how long after th fracture local anæsthesia was possible, and how th plaster was removed.

Dr. BÖHLER, in reply, said that wounds could onl be closed within the first six hours after fracture The great feature of treatment was uninterrupte rest. He had had the same experience with maggots and had seen wonderful results from their use i osteomyelitis in childhood. Reduction of th epiphysis was not difficult, but traction must be com bined with bending movement. Simple local anæs thesia could be used as long as there was a hæmatoma sometimes as long as two weeks after injury, bu when the hæmatoma had gone infiltration could b used. He never shaved or anointed the skin, becaus the hairs gave the plaster good fixation and did no hurt when they were all pulled on together. Whe it was removed four or six weeks later new hairs ha grown and were therefore not incorporated in the cas

LIVERPOOL MEDICAL INSTITUTION.

AT a meeting of this Institution on Nov. 20th Dr L. J. PICTON read a paper on

Amylaceous Dyspepsia.

In this condition, he said, dyspepsia was noticed t follow starchy meals. A starch-eating habit wa recognised, and cure followed abandonment of th habit. The form of starch was important; unburs granules, such as those in the gluten framework o the bread sponge, were insusceptible to the influenc of ptyalin. Slimy gastritis might be caused by exces sive, especially unburst, starch as well as by infectiv catarrh. Delay might be caused not only by slim gastritis, but also, normally, by eating starch an meat together (Pavlov) as in the conventional dietary The satiety necessary for the tranquility of th stomach could be achieved by taking meat an greens. An equal filling of starch and meat involve unnecessary digestive labours as well as delay, bu

greens passed quickly (Beaumont, 1833). Ptyalin digestion in the mouth and stomach "hopper" might start the cycle of digestive preparation. Dr. Picton described a peristaltic and metabolic "gradient" (Alvarez), and discussed the site of its pacemaker. He suggested that the pacemaker could be inhibited by sensitisation and toxic influences—e.g., excess of starch. Symptoms were due to delay, constipation, and peristalsis in the wrong direction to an abnormal degree through flattening or reversal of the gradient. He advocated starch at one meal, meat and greens at another, in dyspepsia.

Ramisection for Hirschsprung's Disease.

Mr. J. B. OLDHAM reported two cases of Hirschsprung's disease on which lumbar sympathetic ganglionectomy and ramisection had been performed two years ago with excellent results. In the first case a girl, aged 4, whose bowels were only opened every 3–14 days in spite of prolonged medical treatment, had the left second, third, and fourth lumbar ganglia, with their rami and the intervening cord, removed, and since then the bowels had acted daily without the aid of drugs. The second patient had been attending hospital regularly for 11 years. Her bowels acted very irregularly. She frequently had to be admitted to hospital with attacks of acute obstruction. On many occasions fæcoliths 4–7 inches in diameter had to be removed, and she had undergone colotomy, coloplication, colostomy, enteroanastomosis, and partial colectomy, but the condition always recurred. After bilateral lumbar sympathetic ganglionectomy and ramisection the bowels had continued to move regularly every day without the aid of drugs or diet. Mr. Oldham described the technique of the abdominal approach to the sympathetic chain, and recommended spinal anæsthesia. He also gave an account of the varying forms of surgical and medical treatment that had been tried from time to time and the unsatisfactory results they had produced. The similarity between Hirschsprung's disease, cardiospasm, congenital pyloric stenosis, and hypertrophic ileal obstruction was described, together with the physiological basis for the hypothesis that all these conditions were due to a hyperactivity, real or comparative, of the sympathetic nervous system. Mr. Oldham suggested that the excellent results obtained by sympathectomy in Hirschsprung's disease gave proof of the truth of this hypothesis.

Dr. C. ALLAN BIRCH said he was interested in lumbar sympathetic ganglionectomy for peripheral vascular diseases, and asked whether this operation ever produced any effect on previously normal bowel movements.

Dr. NORMAN CAPON remarked that earlier diagnosis of the condition was desirable, and pointed out that in the young baby abdominal distension was by no means invariable. It was noteworthy that at least one case had been reported in which severe vomiting and constipation had led to a mistaken diagnosis of congenital pyloric stenosis.

Mr. PHILIP HAWE said that it seemed clear that sympathetic resection should have much more chance of success in conditions such as dilatation of the colon, in which sympathetic hypertonia was probably to blame, than in the treatment of spastic paralysis where the underlying physiological principles were far from clear. There was some reason to expect that this operation would be extended to conditions of intestinal disorder other than Hirschsprung's disease. He had been associated with Mr. K. W. Monsarrat in a case of advanced colonic stasis which resisted medical treatment for years but responded in a most convincing way to a lumbar sympathetic ramisection.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF MEDICINE.

A MEETING of this Section was held on Nov. 14th, with Dr. H. F. MOORE, the President, in the chair.

Diabetes with Phthisis.

Dr. JOHN LAIT showed a case of diabetes mellitus complicated by phthisis, and read a note on the condition.

The patient, a girl aged 14, had apparently suffered from untreated diabetes for over six months before entering hospital. Soon after admission she developed pyrexia and a cough. Radiographic examination showed early cavitation of the left lung in two places, and the sputum contained tubercle bacilli. She had an acute and rapidly progressive tuberculosis, and the general condition was becoming gradually worse in spite of careful treatment of the diabetes. Dr. Lait induced artificial pneumothorax on the affected side, and though at first, owing to adhesions, he did not get complete collapse, the child at once began to improve. The pyrexia stopped, the cough and sputum disappeared, and the weight began to increase.

In order to collapse the lung, said Dr. Lait, he had found it necessary to use a high pressure of air in the pleural cavity so as to stretch the recently formed adhesions. In this he was almost completely successful, for the child stood these high pressures (about 20 cm. water) extremely well, and now (about five months after induction) the left lung was almost completely collapsed. Recently a small pleural effusion had appeared on the collapsed side; this did not seem to do any harm or occasion any discomfort, and might possibly be looked on as assisting the treatment. The diabetic status was excellent, the patient's weight being steadily on the increase.

The PRESIDENT said that in 1914, when Allen was working out the dietetic treatment of diabetes, Joslin noticed that in diabetic patients who developed tuberculosis and lost weight the diabetes improved, and there was sometimes a great increase of the glucose tolerance.

Dr. E. T. FREEMAN, referring to artificial pneumothorax, said that it was remarkable to find a patient as young as Dr. Lait's standing such a high pressure especially on the left side. It was very unusual to get such a high pressure without any movement of the mediastinum. He thought that if the effusion could be increased in size and brought up to the level of the cavity in the lung, it would be a great safeguard against rupture of the cavity. If it was intended to maintain the pressure, yet avoid rupture, it would be better to withdraw fluid and put in air.

Treatment of Polycythæmia Vera Rubra.

Dr. CYRIL MURPHY showed and described the following case:—

A man, aged 51, a cooper, complained at various times since April 1922, of inflammation of joints, and latterly of pain in the left upper portion of his abdomen; also of headache, lightness of the head, and vomiting on one occasion. Late in 1923 Dr. Murphy examined him, and found that the lips, the lobes of ears, and the finger-tips were cerise-coloured and the cornea purplish. The venules of the face seemed engorged—a feature still noticeable. The spleen extended four fingers' breadth below the left costal margin, and was very tender. The left knee subsequently became swollen in a spindle-shape, while the veins of the leg stood out in relief, and flush over the left knee became almost cyanotic. He was intensely feverish for about 14 days, and

the fever was not influenced by salicylates. Other joints, particularly of the great toes and wrists, were subsequently involved and were just as resistant to treatment. The arthritis was now the most absorbing symptom.

Subsequent examination of the blood showed a negative Wassermann reaction, and a red cell count of over 11 millions per c.mm. Later counts were (1925) 9 millions, with 30,000 leucocytes, and (1927) 8 millions with hæmoglobin 125 per cent.

Many methods of treatment were tried, chief among them benzol, and various anodynes which were of no value. Later, sodium carbonate was given in 10-grain doses three times a day in an attempt to diminish the acidity of the blood, which some members of the French school at this time thought was increased in this condition. This treatment seemed to give some relief, and in the course of a year lowered the blood count by one million. X rays to the long bones seemed to aggravate the symptoms, so this form of treatment was early discarded. Venesection, too, was abandoned as being of very temporary benefit.

Since seeing a number of cases of Vaquez's disease treated at the Mayo Clinic by ingestion of phenylhydrazine hydrochloride, Dr. Murphy had used this drug in the present case, he said, for 13 months, during which the patient took 0·1 g. per week. The spleen was still enlarged and tender, and there was still—though to a very slight extent—some of the characteristic cerise hue noticeable on the lips. The blood pressure, which had been 168 systolic and 97 diastolic, was now 142 systolic and 81 diastolic. The blood count was: red cells 4,500,000; white cells 13,200; hæmoglobin 80 per cent., and colour-index 0·9.

The PRESIDENT said he had not previously known that there was any connexion between arthritis and polycythæmia. He had treated four cases of this disease in the last three years, one woman and three men. They all had splenomegaly and albuminuria, and the typical facies, cerise in colour. The woman, aged 48, was treated with X rays applied to the bones, but with very little benefit. Phenylhydrazine was tried, and reduced the red blood cell count and the hæmoglobin, and it was found that 0·1 g. of the drug daily was sufficient to keep the blood normal. One man, aged 42, was given phenylhydrazine, but with very little result. Next a course of X rays was tried, also with little result, and then the phenylhydrazine was tried again. After about four weeks' treatment he began to improve, and it was now found that 0·1 g. every 7 to 10 days was enough to keep the blood approximately normal. The second man, aged 44, had apparently had an attack of thrombo-angiitis obliterans in the left radial artery. This condition had been described as a complication of polycythæmia, but was supposed to be very rare. This patient had a course of X ray treatment for three months, but the result, as far as the blood was concerned, was absolutely negative. He was now having phenylhydrazine, and was improving. The fourth patient, a man aged 55, had had phenylhydrazine for two months, but with no result. He was now having X ray treatment. Dr. Moore thought that in these cases X rays made the bone-marrow more vulnerable to the action of phenylhydrazine.

Dr. MURPHY, replying, said he thought there must be some connexion between polycythæmia and arthritis, for in his case the arthritis improved when the polycythæmia improved.

Diagnosis of Renal Rickets.

Sir WILLIAM WHEELER read notes on two cases suggestive of renal rickets, and showed one patient. The condition, said Sir William, comprised: (1) early renal derangement; (2) infantilism or dwarfism which might be early or only at puberty; and (3) rachitic changes in the bones, generally of the type of adolescent rickets.

In his first case renal rickets was suspected in a chil aged 7 owing to the presence of albumin, red blood cell and casts in the urine, combined with polyuria. Ther were rachitic changes in the chest and cessation of growth The child had blue sclerotics, a condition not associate with rickets. Radiographic appearances of the bones wer not suggestive of the renal type of rickets, and finally bloo examination, reported by Dr. A. G. Thompson, was agains the diagnosis. The Wassermann reaction was strongl positive and congenital syphilis probably explained all th phenomena. The albuminuria was intermittent or temporary for it was not found at a later date.

In the second case the patient suffered from doubl congenital hydronephrosis. Tests were made with intravenou injections of uroselectan. There was a stone in the le kidney. The stone was removed and the kidney was foun atrophied and cystic with a dilated pelvis. The radiologist' report stated that there was pronounced dilatation of th pelvis and calices on the right side, with moderate dilatatio on the left which contained the stone. The child had under gone five operations for rachitic deformities.

In this case, said Sir William, the radiographi appearances of the bones approximated to th description of renal rickets given by various writer After removal of the stone albumin disappeare from the urine but reappeared after an interva The patient was aged 17, but was only 4 ft. 3 in. i height—no taller than an average child of ten The prognosis of renal rickets was bad. Antirachiti treatment—e.g., by sunlight and cod-liver oil—wa believed by some authorities to precipitate uræmia Most of the cases recorded had come from Englis industrial areas.

Dr. A. G. THOMPSON said that four clinical types o rickets, could be distinguished—namely, ordinary infantile rickets, late rickets, and two peculiar type associated with cœliac disease and with rena infantilism. Nearly 90 per cent. of the inorgani matter of the bones of young children consists o tri-calcium phosphate, and if calcium and phosphoru were supplied in adequate amount in the diet goo bone was laid down. In infantile rickets there wa a negative balance of these elements, as much bein excreted as was absorbed. In addition, the bloo phosphorus was very low (1–2 mg. per cent.), thoug the calcium was usually normal. Hence there was a upset of the calcium phosphorus ratio with con sequent failure of ossification. This might resul from several factors—e.g., faulty diet, lack of vitamin D and sunshine, and bad hygienic conditions. I renal infantilism, though the conditions might b perfect, a peculiar type of rickets often developed This was due to retention of phosphorus by th damaged kidney with consequent upset of the calcium phosphorus ratio. Dr. Thompson did not think either of Sir William's cases was renal rickets, though both were interesting and obscure examples o infantilism. The first was probably mainly syphilitic with perhaps a rickety element added. The second might be a case of healed rickets.

Dr. R. E. STEEN said that ordinary rickets was common, late or adolescent rickets was rare, and renal rickets was extremely rare. He mentioned a case of renal rickets which he had seen in Great Ormond-street Hospital, and said that the thing which struck him about it was the marked arterio-sclerosis of the vessels. The blood-urea was high, and the blood pressure also was raised.

DERBYSHIRE ROYAL INFIRMARY.—The 121st annual report shows that 6370 patients were admitted during the year; out-patients numbered 13,000, and casualties 14,148—substantial increases in each category. In-patients stayed on an average 17·6 days. There was an increase of more than 16,000 out-patient attendances, the total being just under 176,000. Since 1914 the number of beds has increased from 240 to 346. The income was £51,012 and the expenditure £50,989.

REVIEWS AND NOTICES OF BOOKS

Tuberculosis among Children.

By J. ARTHUR MYERS, Ph.D., M.D., F.A.C.P., Chief of Medical Staff, Leymanhurst School for Tuberculous Children; Associate Professor of Preventive Medicine, University of Minnesota. With chapters by C. A. STEWART, M.D., Ph.D., Assistant Professor of Pediatics at the University; and PAUL W. GIESSLER, M.D., Assistant Professor of Surgery at the University. London: Baillière, Tindall and Cox. 1930. Pp. 208. 16*s*.

THE first part of this book deals with tuberculosis n infancy. Congenital tuberculosis is practically nknown, and the author remarks that tuberculous nfection in infancy always results from contact with a erson or animal suffering from tuberculosis or acting s a carrier. A higher incidence of disease exists mong infants with prolonged exposure to infection, nd this incidence is found to vary directly with the pportunities for exposure. A positive intradermal uberculin test indicates that the child has been nfected, whereas a negative one is strong evidence nat it has not. The positive test indicates allergy hich appears to ebb and flow with the activity or tency of a tuberculous lesion. The author points ut that physical signs are usually of no avail and nat X ray examination combined with symptoms nd history of the case are the most important guides diagnosis. It is refreshing to read that the prognosis f tuberculosis among infants usually is very good. hildren undoubtedly have an excellent resistance to uberculous infection in spite of the old-fashioned aching that the disease in childhood is always fatal. n the section dealing with prevention it is stated nat the first step is to prevent exposure. If infection as already taken place one should guard against rther infection.

In the second part of the book tuberculosis in ildhood is discussed, whilst the third part is devoted tuberculosis in the "teens." There is an interesting apter on chronic non-tuberculous basal pulmonary sease and another on tuberculosis of the bones, joints, d other sites besides the lungs. At the end of ch chapter is an excellent summary, and a full list references to other authors is included. In an troductory chapter Dr. Allen K. Krause pays ibute to a book which will be of value to all those ho are interested in the problem of tuberculosis.

he Diagnosis of Mental Deficiency.

By HENRY HERD, M.A., M.B., Ch.B. Edin., Senior Assistant School Medical Officer, Manchester Education Committee. London: Hodder and Stoughton, Ltd. 1930. Pp. 272. 12*s*. 6*d*.

THIS wise and practical handbook should be in e possession of every school medical officer and acher, and will be welcomed by all who have to deal th mental defect. Dr. Herd begins by discussing e legal definitions and social implications of mental fect, and then threads his way with a sure step rough the difficult maze of psychology and mental velopment. Without going into technicalities he ntrives to explain the light thrown on the subject by ychological conceptions, and to give a general working sis of psychological principles for the student of ntal defect. He then goes on to the diagnosis oper, indicating the points which must be obtained from the patient himself and from other people, and finally discussing the various tests, from the Binet-Simon scale and Porteous mazes to temperamental and scholastic tests. His ninth chapter gives a clear outline of the grades of deficiency, and is followed by 24 illustrative cases (which, by a curious misprint, are called "illustrated cases" at the head of each page). His chapter on moral defect discusses this thorny question with common sense, and the remaining chapters deal with legal duties and powers, preliminary selection and treatment, and future developments. Each chapter is supplied with a short bibliography which will enable the interested reader to pursue the subject in greater detail than the scope of this work allows, and an appendix includes forms of report and certificate. The book is attractively produced and pleasantly written. It is illustrated with photographs of half a dozen typical defectives, and a number of drawings by normal and defective children. Dr. Herd is to be congratulated on his success in the task he set himself: "to provide a book midway between the medical and psychological, containing sufficient material from both aspects for the examiner." The Binet-Simon tests are not given in sufficient detail to enable a person who is not familiar with them to use them straight out of this book; but that is a wise precaution, for mental testing should never be learnt exclusively from a book, and the shortened form given here provides a useful reminder for those who are not using the tests every day but have learned how to apply them.

Simple Beginnings in the Training of Mentally Defective Children.

Third (Memorial) edition. By MARGARET MACDOWALL. London: Law and Local Government Publications, Ltd. 1930. Pp. 133. 3*s*. 6*d*.

THE publication of a third edition of Margaret Macdowall's little book on the training of mentally defective children is a fitting memorial of her pioneer work in this special and—at the time of its first issue—little regarded department of education. For her work, of which this book is the record, was her life—no mere occupation in the ordinary sense, but a real vocation to which she felt herself called. Her realisation of her vocation came somewhat suddenly through the presence of an imbecile child in the family with whom she was living, and she gave herself wholeheartedly henceforth to the discovery of methods of training such children and to their practical application. For a time she worked under the guidance of Dr. Shuttleworth at the Royal Albert Institution at Lancaster, and later started a small school at Ealing which ultimately developed into the school at Burgess Hill in Sussex. As is emphasised by both Sir Maurice Craig and Dr. A. F. Tredgold in the introduction to this memorial edition, the keynote to the success of her work was the fact that she made a special study of each child, got into intimate touch with its special abilities and disabilities and its special traits of character, and adapted her training to the individuality she so discovered. Intuitive insight there must have been and was, but it was reinforced by careful observation and thought. Public authorities sent students to study her methods, and thus her ideas and ideals were spread abroad and have become common knowledge to those interested. An integral part of her work was its religious aspect, for it was an essential

tenet of the society under whose auspices she worked that the spiritual side of man's nature must be cultivated as a means to the development of his mental powers, and this belief coloured all her efforts.

The methods of training described in the book are obviously applicable to quite low grades of deficiency, at least as low as the imbecile. Much stress is laid upon detailed method in the training in such elementary acquirements as eating, dressing, sitting, walking, talking, control of even simple movements, muscular balance, cleanly habits, and the conquest of bad automatic habits, such as body rocking and nail-biting. Lessons in simple domestic and industrial processes are given in much detail—a point that makes the book of special value for young and inexperienced teachers and for intelligent parents. The book reveals an intimate knowledge of the special characteristics of mentally defective children, and of the many difficulties that arise in their education. Much of her teaching has become accepted tradition now, but no special school teacher can afford to miss reading it, and even certifying officers will learn much from a careful perusal of its pages. At times her enthusiastic optimism carries her beyond the facts. Of the spastic paralytic type, for example, she remarks that "in most of these cases the ideas are there and also the desire to express them," and that the only obstacle is the "lack of control of muscular energy." Yet one has to recognise that without the idealism which saw visions in advance of possibilities, she would not have done the work she did. The whole book and her whole life is a useful reminder of the necessity for a sympathetic idealism in the training, not only of mental defectives, but also of the many other types of cripples, physical or mental, for whom this humanitarian age loves to provide.

Manual of Physiology

for Students and Practitioners.

Third edition. By H. WILLOUGHBY LYLE, M.D., B.S. Lond., F.R.C.S. Eng.; and DAVID DE SOUZA, M.D., D.Sc., F.R.C.P. Lond. London: Humphrey Milford, Oxford University Press. 1930. Pp. 820. 16*s*.

PRESENT-DAY students of physiology are not a little embarrassed with the array of text-books from which they have to make a choice. The authors of the volume under review have endeavoured to compromise between the classical tome and the ubiquitous "cram" book, and to give their readers a general survey of the subject that is neither too detailed nor unduly condensed. About 40 pages are devoted to chemical physiology, and good use has been made of this space. There follow the usual sections dealing with the different systems and functions of the body. The authors deal cautiously with debatable subjects, and where more than one hypothesis is applicable they endeavour to state the position impartially. A very useful chapter is devoted to diet and food values; and the section dealing with mental physiology gives a good introduction to this branch of the science. The section on sense organs is well presented, especially the portion which explains vision. The eye and its appendages are discussed very fully both from their anatomical and their physiological aspects; this part of the book, comprising fully 60 pages, forms almost a treatise in itself. The authors state that they have endeavoured to indicate the bearing of physiology upon medicine and surgery, but they have obviously been hampered in this design by limitations of space. Nevertheless the busy practitioner will find this volume very useful for revising his knowledge of physiology. There are very few errors of commission, but one can scarcely agree with the inference to be derived from the authors' definition of defibrinated blood that it is composed only of blood serum with oxyhæmoglobin in solution. An illustration is given on page 382 to show the effect of respiration upon the blood pressure. The curve indicates 17 heart beats for one respiratory phase; this can scarcely be looked upon as being physiological. The book bears evidence of having been brought into line with the more important recent advances, although the omission of all reference to Collip's work on the parathyroids is surprising. The volume is well printed and of convenient size.

Clinical Chemistry in Practical Medicine.

By C. P. STEWARD, M.Sc., Ph.D., Lecturer in Biochemistry, University of Edinburgh; and D. M. DUNLOP, B.A., M.D., M.R.C.P., Assistant in Department of Therapeutics, University of Edinburgh. Edinburgh: E. and S. Livingstone. 1930. Pp. 246. 7*s*. 6*d*.

OF recent years several books on clinical biochemistry have been written, and it becomes increasingly difficult to determine which book is suitable for a particular class of worker. The authors have intended this publication to be for the use of the practitioner, the house physician, and the senior student; as they themselves say, "it is not an elaborate text-book of biochemistry for the laboratory worker." The methods for estimating blood constituents, with the exception of urea, are not given in detail, but the interpretation of their results is fully explained. The chapter dealing with gastric analysis is disappointing in view of recent work, and no mention is made of the blood plasma proteins. It is a useful book in many respects, but perhaps too much has been sacrificed for the sake of simplicity and brevity.

Diseases of the Genito-Urinary System

in Infancy and Childhood.

By HENRY F. HELMHOLZ, M.D., Professor of Pediatrics, University of Minnesota (the Mayo Foundation); and SAMUEL AMBERG, M.D., Associate Professor of Pediatrics at the University. Supervising Editor: ROYAL STORRS HAYNES, Ph.B., M.D. London: D. Appleton and Co. 1930. Pp. 239.

THIS book forms Vol. XIX. of the Clinical Pediatrics series and is only obtainable with Vol. XX. on Laboratory Pediatrics and Vol. XXI., which contains the composite index and cumulative Supplement at 32*s*. for the three volumes. Vol. XIX. is an account of the genito-urinary diseases as they occur in early life. It comes from the Mayo Clinic, and carries on the tradition of excellent workmanship and full reference which we are accustomed to look for in any publication emanating from this clinic. It does not bring forward anything very new, but should prove acceptable to the "general practitioner of medicine" for whom it is intended. The volume contains a series of monographs with illustrative cases, the longest sections being those devoted to the pyogenic infections and to bilateral hæmatogenous renal disease. Enuresis and its treatment are also discussed in full detail. Sections on embryology and methods of diagnosis are included, and the authors give some very useful tables of diet for children of varying ages.

THE LANCET.

LONDON: SATURDAY, DECEMBER 6, 1930.

THE SIGNIFICANCE OF FALSE WITNESS.

THE Maudsley Lecture, delivered by Mr. Justice MCCARDIE before the Royal Medico-Psychological Association on Nov. 20th, has received attention from the press and called forth a question in Parliament. Handled by one whose task for years has been to extract from specific tangles a specific answer to the problem of what really happened, the subject of "Truth" made a wide appeal, and the lecturer's definition of truth as 'conformity to fact and reality" seems straightforward enough to be accepted by everyone. But recent philosophical conceptions have made unstable some of our beliefs in fact and reality; illusion, misinterpretation, and imperfect observation have been subjects of laboratory experiment, and the part they play in affecting those beliefs and in vitiating evidence is becoming better known. Instead of being a common gift of mankind, the power of accurate observation and description is so rare that its possessor stands out above his fellows, and the deliberate cultivation of such power is a first essential in scientific training. We are confused, too, by the ascription to truth of two different qualities—accuracy and honesty; besides measuring it by the objective standard of reality we apply to it a subjective standard of morality. "Mistaken but honest" as applied to a witness expresses these two standards, and the common situation thus summed up is scarcely covered by Sir HENRY MCCARDIE'S list of the three major enemies of truth—lack of courage, self-interest, and bias—unless we take bias in a very general sense. He noted that the psychology of bias had yet to be fully revealed, and asked whether we perceived the foes of truth who might be lurking in our own minds and instincts. The psychologist might answer that bias in all its forms, especially bias due to unconscious mental processes, has been the special study of psychology; indeed, it is laid to the psychologist's charge that by his emphasis upon unconscious bias he has dethroned reason and undermined personal responsibility.

A superficial or naked-eye psychology suffices for the understanding of a great deal of false witness, such as that form of perjury so common since permission to give evidence has practically compelled the accused to enter the box. False witness due to our weak powers of observation, or to the partisanship inseparable from our methods of legal advocacy, is less obvious though easily recognised when its mechanisms are borne in mind. There is other false witness in which a naked-eye psychology goes woefully astray, as in the case commented upon in our columns some weeks ago[1] in which a youth made against himself a false accusation of murder, was released as a mischievous liar, and subsequently confirmed the suspicion of mental disorder by attempting arson. The problem of motive in such cases can be solved only by a technique of mental exploration, and the same method is called for in some of the cases referred to by Sir HENRY MCCARDIE in which children or girls gave false evidence against men charged with sexual offences. Here the corroboration of false evidence sometimes suggests folie à deux. Short of such extreme cases there are certainly others where the source of the impulse to testify falsely is recognised dimly or not at all by the witness and in which the facile explanation of hard lying is inadequate. Sir HENRY expressed a hope that psychologists would give attention to the problem of truth-finding in open court; but the open court gives little opportunity for direct psychological aid in that respect, and anything but open methods is against the spirit of our law. The word-association test, for example, would be rejected as savouring of the so-called third degree. Naked-eye psychology must at present suffice to sort out facts from a tangle of evidence, and whoever has sat for an hour or two in a Metropolitan police-court must admire the skill of an experienced magistrate in performing his task. Yet the cases are common in which deeper knowledge can reveal the significance of evidence or conduct that would otherwise escape attention and can aid in a fuller understanding both of the evidence and the facts. Mr. Justice EVE took the occasion of the anniversary dinner of the Royal Society, on Dec. 1st, to dissociate himself from his learned brother's view as to the increase of perjury in law courts, but the divergence of opinion may well be explained by the fact that the dissentients were not agreed upon definitions.

PHYSICS AND PHYSIC.

BY the beneficence of Mr. ELDRIDGE R. JOHNSON an institute for medical physics has been founded in the medical school of the University of Pennsylvania. Its object is not, as might be supposed, to exploit the methods and results of massage, hydrotherapy, gymnastics, radiation treatment, and the like, but to see how far modern experimental philosophy can aid in the understanding of life and disease. The purpose of the Foundation is to interpret pathological and normal biological phenomena in terms of physics, and to investigate them along physical lines; it is also anticipated that considerable use will be found in having a body of trained physicists available to solve specific physical problems with which the clinician meets in the wards or in his research. All this is, we believe, quite a fresh departure in a medical school, and raises many interesting considerations, some of which are dealt with in a stimulating address[2] given by Prof. A. V. HILL at the inauguration

[1] THE LANCET, Oct. 11th, p. 810.
[2] Jour. Amer. Med. Assoc., Nov. 8th, p. 1393.

ceremony. On one point Prof. HILL is explicitly clear; he does not believe that the phenomena of life can be explained in terms of the physics and chemistry of to-day. What the future will produce, no one can tell. But for the present he insists that in the organism as a whole we have a phenomenon of a special kind, whose unity and uniqueness are as essential as any of the concepts of physics. He sees, however, that there are considerable difficulties in subjecting the organism as a whole to experimental analysis, and he urged upon his audience the notion that the best way of investigating the organism is the way provided by the ideas and technique of physics. No one will doubt the universal value of precise measurement in all branches of natural science, and his own distinguished contributions to knowledge are sufficient evidence in favour of Prof. HILL'S thesis that physics is at least one of several good methods of examining live organisms, so long as the examiner is a real physicist and not a physicist ad hoc.

All engaged in scientific pursuits will support the proposal that work should be encouraged in the fields that lie between the main territories into which science is arbitrarily divided. The increasing mass of knowledge makes it impossible for any one mind to include the whole; it is becoming increasingly difficult for anyone to be acquainted with the whole of one department. Most workers perforce keep within some limited field. And yet there must be continual overlap if the best results are to be obtained, and there are evidently considerable advantages to be looked for if occasionally the chemist will become a bacteriologist or the zoologist a morbid anatomist or, as in the present instance, a physicist an applied physiologist. Prof. HILL also draws attention to one curiosity of university education which must surely considerably hamper this transference and coöperation. Every student of biology is compelled to acquire some elementary knowledge of chemistry and physics. But students whose main interest is in chemistry and physics are allowed to go through their whole curriculum with nothing else than mathematics; this course may produce excellent physicists, but it leads to a sadly uneducated view of the real world and to an amazing ignorance of what biology is about. Surely it would be to everyone's good that an elementary acquaintance with biology should be demanded of every serious student of natural science. Advances in physiology and medicine may come from anywhere; they have, in fact, come from the most unexpected sources, and we believe with Prof. HILL that almost any sort of curiosity has its clinical contribution to make—perhaps even spiritualism, of which he seems to think poorly.

THE DENTIST'S SIGN.

ESTABLISHED for the statutory purposes of the Dentists Acts and therefore charged with the duty of upholding the status and standards of a learned profession, the Dental Board of the United Kingdom continues its efforts against advertising by dentists. In particular it seeks to suppress the abuse of signs announcing a dentist's place of practice. The "Important Notice," circulated to all practitioners, informs them clearly that the only permissible sign is that which "in its character, position, size and wording is merely such as may reasonably be required to indicate to persons seeking them the exact location of and entrance to the premises at which the dental practice is carried on." The Dental Board has wisely restricted itself to this general statement of principle and has not undertaken to delimit with a yardstick the uniform dimensions permissible to announcements and lettering. Naturally the general standard cannot be applied to particular cases without apparently evolving certain rule-of-thumb formulæ. There are instructive passages in the address recently delivered by Sir FRANCIS ACLAND as chairman of the Board at the opening of its nineteenth session. Summarising correspondence with registered dentists in Glasgow, he showed that the Board exercises an equitable jurisdiction and recognises that circumstances vary with the situation of the premises. The Board expects that a practitioner in a private residential street will be content to announce his place of practice with an ordinary professional plate. Elsewhere, amid shops and other professional premises, the dentist's name and description may be allowed in addition on not more than two windows. In busy commercial thoroughfares the Board has not objected to hanging or illuminated box signs of reasonable size, though it does not tolerate the use of "daylight signs" or intermittent or flickering lights of the kind familiar in the modern manifestations of commercial advertising.

No reasonable practitioner, we imagine, will think that the Dental Board has been unduly severe in imposing limitations. It is not desirable that the public should be encouraged to suppose, by analogy with the sphere of commercial propaganda, that the value of a dentist's skill is to be measured by the size, brilliance, or frequency of his notices. Some dentists in Glasgow and the West of Scotland, it appears, employ fascia boards with letters 12 inches high or more. The Dental Board is entitled to the support of the whole profession in endeavouring to put an end to such an abuse. It is gratifying to hear from Sir FRANCIS ACLAND that the Lanarkshire Dentists Society has notified its members that large letters or fascia or other notice boards are not permissible and has requested that all such announcements be removed. There is evidence that the more blatant forms of dental advertising are occasionally employed out of the desire to outbid a neighbour. Action by the local organisations which have the best possible knowledge of the circumstances is an appropriate remedy. Meanwhile the Dental Board is trying to raise the general standard progressively. As this is found possible, local diversities will diminish. There are, of course, some who would prefer that an absolute and uniform maximum of permissible display should be laid down irrespective of local circumstances. To this demand Sir FRANCIS ACLAND has made an effective reply. He points

out that in that event the Dental Board could never hope to win any case on appeal to the High Court. He pictures himself under cross-examination as an official witness on the appeal of a dentist whose name has been struck off the register for advertising his premises at a corner site on Piccadilly Circus with the locally familiar type of flashing or revolving coloured electric lights. He might have to admit in the witness-box that he regarded an illuminated box sign in Harley-street as even more flagrant and disgraceful in a professional sense; and yet such a box sign would, if the uniform standardisation were adopted which some now desire, be legitimate.

The Dental Board has achieved success in these matters by persuasion rather than by compulsion. But it must not be thought that there is no legal power to enforce the standard. As the chairman has lately explained, the judicial definition of infamous and disgraceful conduct in a professional respect will cover conduct by a practitioner in the pursuit of his profession "which will be reasonably regarded as disgraceful or dishonourable by his professional brethren of good repute and competency." Those words, framed by Lord Justice LOPES and cited with approval by the Master of the Rolls in Allinson's case in 1894, are as applicable to the dental as to the medical practitioner.

ANNOTATIONS

THE COMMISSION ON NURSING.

Lord Crawford and Balcarres has consented to preside over THE LANCET Commission on the position of nursing. The terms of reference of the Commission are to inquire into the reasons for the shortage of candidates, trained and untrained, for nursing the sick in general and special hospitals throughout the country, and to offer suggestions for making the service more attractive to women suitable for this necessary work. The members of the Commission are:

The Earl of CRAWFORD and BALCARRES, P.C., K.T., F.R.S.
Prof. HENRY CLAY, M.A., D.Sc., late Professor of Social Economics in the University of Manchester.
Miss R. E. DARBYSHIRE, R.R.C., Matron, University College Hospital.
Miss L. CLARK, M.B.E., R.R.C., Matron, Whipps Cross Hospital.
Dr. ROBERT HUTCHISON, F.R.C.P., Physician to the London Hospital and to the Hospital for Sick Children, Great Ormond-street.
Prof. F. R. FRASER, M.D., F.R.C.P., Professor of Medicine in the University of London, Physician to St. Bartholomew's Hospital.
Mr. A. LISTER HARRISON, J.P., Chairman, Committee of Management, Metropolitan Hospital.
Miss M. D. BROCK, D.Litt., Headmistress, the Mary Datchelor Girls' School.
Mrs. OLIVER STRACHEY, Chairman, Employments Committee, London Society for Women's Service.
Miss EDITH THOMPSON, C.B.E., Member of Council, Bedford College, University of London.
Sir SQUIRE SPRIGGE, M.D., F.R.C.P., the Editor of THE LANCET, with Dr. M. H. KETTLE, an assistant editor, as honorary secretary.

Any organisation or individual wishing to provide evidence for the Commission to consider, or to make proposals relating to the improvement of conditions of service of the nursing profession, is asked to communicate with the hon. secretary at THE LANCET Offices, 7, Adam-street, Adelphi, London, W.C.

THE EDUCATION OF THE DEAF.

A PRACTICAL step forward in the higher education of the deaf was taken at the recent meeting of the National Institute for the Deaf held at University College, London, and presided over by Lord Charnwood. There were present at the meeting representatives of educational authorities and special schools, and members of bodies such as welfare societies generally and the societies associated with the National Institute in different counties, while delegates from county councils also attended. Lord Charnwood laid before the meeting a scheme designed to fill an admitted gap in our system of national education, seeing that at the present moment the disability of deafness debars scholars leaving the primary schools from proceeding to institutions where they could receive a higher training; in this way valuable material is lost to the nation, while many persons quite capable of being not only self-supporting but useful citizens are driven into positions of helplessness. Lord Charnwood read to the meeting a letter from Sir Charles Trevelyan, President of the Board of Education, agreeing to the suggestion that there is a definite need of secondary schools for the deaf, which institutions had yielded good results already in the United States. Speaking to this authoritative text, Lord Charnwood placed before the meeting a scheme for promoting the higher education of the deaf by providing a school at which deaf children, after reaching the age of 16, would be assisted to study along particular lines especially fitted to meet their capabilities. The scheme was drawn up by a committee of the National Institute, and was placed before the meeting with a recommendation that an appeal should be made for £20,000, which would be required at the outset. Lord Charnwood allowed that more than double that sum would be required before the plans could be realised, but he could have left no doubt in the mind of the audience that the demand for public assistance was justified. Money we know is scarce, and forcible appeals reach daily those who are in a position to help good work; but alike from the public and the medical point of view a plan for the securing of the higher education of the deaf should be given every chance of early success. The careful training of the deaf would make self-supporting many who are now burdens on others, and would relieve the deadly isolation of the plight of the deaf. Further, among the deaf population, given a proper chance of self-expression, there would certainly be found, he reiterated, many whose work was valuable to society. This is a point which perpetually escapes the public attention, while it constitutes a most practical argument for public appeal.

CONSTITUTION IN GRAVES'S DISEASE.

MANY observers have pointed out that periodic variation of signs and symptoms is common in Graves's disease, and have reported difficulties in diagnosis to which exacerbations and remissions give rise. E. Moschcowitz [1] has carried these observations further by studying the temperamental peculiarities

[1] Arch. Internal Med., October, 1930, p. 610.

of patients for many years before they actually develop the disease. In his opinion these peculiarities are characteristic. Such people, he says, are always of a certain type—sensitive, restless, temperamental and emotionally unstable, with rapid pulse-rate and a tendency to tremor which increases at times of mental strain or emotional crisis. They are very sensitive to thyroid medication. The transition to true Graves's disease is often sudden, and the exciting cause is usually some form of psychic trauma, often fear. The signs and symptoms of hyperthyroidism are secondary phenomena, and the degree to which basal metabolism is increased is only an indication of the extent to which the thyroid is overactive, the value of the test being in some way equivalent to the value of the clinical thermometer reading in a febrile state. When as a result of operation or remission the basal metabolic rate becomes normal the constitutional factor remains unchanged. This is the true basis of the disease, and is often hereditary, but environment also plays a part in accentuating the tendency. Moschcowitz thinks the disease has a greater incidence in the female sex because women are more sensitive, while racially it is a product of the higher civilisations. Understanding of these constitutional factors shows at once that treatment directed to the thyroid alone is insufficient and likely to fail unless attempts are subsequently made to improve surroundings and mental outlook. Treatment, in fact, only begins after the operation has been performed, and in Moschcowitz's opinion complete cure is never possible.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.

THE new school building, gift of the Rockefeller Foundation, has only been occupied since the recess of 1929, but in addressing the annual meeting of the Court on Nov. 28th, Prof. W. W. Jameson, the dean of the school, was able to speak of considerable development of work in the various divisions since that time. Sir Andrew Balfour, director of the school, was unfortunately prevented by illness from attending the meeting, and the dean presented the sixth annual report to the governors in his stead. During the past year the school has received delegates attending a conference organised by the Central Council for Health Education and, on a later occasion, members of the American Public Health Association. A study of the report of the board of management, presented by Sir Harry Goschen, shows the wide range of research now in progress in the various divisions; in bacteriology *B. aertrycke* and *B. abortus* are under investigation, as well as a Salmonella bacillus causing abortion in sheep; in biochemistry the metabolism of certain of the lower fungi are being studied, and in the division of chemistry applied to hygiene the blood changes in infection and the oxidation of domestic and trade effluents have been under consideration. In the department of entomology research has been chiefly concerned with the relation between insects and atmospheric conditions and with insect respiration; papers have been published by workers in the department of helminthology on ascariasis and on the fauna of sewage. A large number of protozoa have been studied, including the trypanosomidæ, certain coccidia, and the malarial parasite. Research on agricultural parasites is being carried out at St. Albans by the Institute of Agricultural Parasitology.

The public health division has been particularly concerned to provide courses of instruction for public health students, and this end has been forwarded by arranging for a series of lectures to be delivered by recognised experts. Coöperation on the part of various Government departments, local authorities and medical officers of health has made it possible for students to visit places of public health interest. A collection of plans and specifications is being collected with the aid of the public health service which will make it possible for the division to act, in time, as a clearing station for the public health data which accumulate from year to year. Already increasing numbers of persons are applying to the school for information and assistance, and many visitors are sent to the division by the League of Nations and the Rockefeller Foundation. Thanks to the Seamen's Hospital Society an adequate supply of clinical material has been available for teaching purposes at the Hospital for Tropical Diseases, and experiments are being made to prepare clinical cinematograph films, of which one on beri-beri has already been completed. The museum of the school is still incomplete but includes sections on water-supplies, sewage disposal, contagious diseases, milk production, and tropical medicine. The library is growing steadily, and the use of a medical library is demonstrated to the students at the beginning of every tropical course.

The financial position, though satisfactory at the moment, calls for the backing of a large endowment; but, as the annual report points out, anything in the nature of a hospital appeal would be unlikely to excite widespread sympathy. It is not generally appreciated that the familiar assertion that prevention is better than cure is a grotesque understatement. An increased income may ultimately be secured from the colonial Governments, and when Sir Andrew Balfour's health permits he will visit the colonies to make the necessary appeal on behalf of the school.

REACTION OF LIVING TISSUE TO IRRADIATION

A CRITICAL review of the harmful effects of irradiation by X rays and radium is contributed to the *Quarterly Journal of Medicine* for October by Sir Humphry Rolleston who gives references to no less than 288 original papers. The risks from the use of X rays were reported, he reminds us, within a short time of the application of these rays in medicine, and the succeeding years have shown that, while the effects of improper handling can be eliminated by the adoption of suitable precautions, the best means of avoiding damage to the tissues in the course of treatment have yet to be determined. Two sections of the review deal with matters which are warmly debated at the present time. The first of these is the possibility of stimulating normal tissues by such rays. Sir Humphry himself inclines to the view that any apparent stimulation of normal tissues is a temporary phase, followed invariably by more or less definite functional or organic deterioration. It is, we think, true to say that all the possible modes of stimulation have not yet been tried; if and when optimum conditions are found, it seems reasonable to suppose that the temporary phase of stimulation may be so lengthened as to rid the term of its usual rather restricted interpretation. The second crux is the question whether such rays can exert a stimulating action on malignant growths. From a consensus of the considerable number of papers on the subject Sir Humphry states that a stimulating action cannot be regarded as definitely established. But without regarding it as a certainty we must yet

reckon with the possibility of stimulated growth, although, if a malignant mass subsequently grows faster after irradiation than before, it is not safe to draw the conclusion that the growth has been stimulated. The inhibitory influence of the surrounding tissues of the body may have been impaired or the resistance diminished in other ways. Part of the divergence of opinion about stimulation may arise from too strict an interpretation of the term and too little attention to the processes involved. In the *British Journal of Radiology* for October, Dr. Takahashi describes a series of carefully planned experiments designed to show the effects of beta and gamma rays upon the processes of repair. Contrary to expectation he found that a region of normal tissue would sometimes react favourably to a strong dose of radiation when it did not to a weak dose. Further, he was able to show that the initial damage caused by the radiation had to be of a certain severity in order to provoke regeneration. In the interest of precision this term might be preferred to "stimulation" in describing the reactions to irradiation.

THE BOARD OF CONTROL.

UNDER the provisions of the Mental Treatment Act, 1930, the Board of Control will be reconstituted, as from Jan. 1st, 1931, to consist of the chairman and four other senior commissioners. Mr. Laurence George Brock, chairman of the present Board, will be chairman of the Board as reconstituted. The other members will be Mr. Simon John Fraser Macleod, K.C., on the recommendation of the Lord Chancellor, and Sir Charles Hubert Bond, F.R.C.P., Dr. Arthur Rotherham, and Mrs. Ellen Pinsent, on the recommendation of the Minister of Health.

INTEREST IN FOOD.

LAST Friday's discussion at the Royal Society of Medicine (reported on p. 1236) showed no waning of interest in the problems of national feeding, which were forced on Europe in 1914-18. Dr. Hamill himself brought out the point that in addition to negative factors there may be positive food factors which exert inimical effects on metabolism. We now that a substance occurs in cereals, especially in oatmeal, which reduces calcium retention and the calcification of bone, and which is neutralised by plenty of vitamin D, best obtained from milk and fat fish such as herring. This may be but the beginning of a new grouping of food factors. A correct plan of diet may imply a delicate and complicated balancing of such factors, far beyond our present knowledge. Although so many knowledgeable people took part in the discussion the question went unanswered whether the taking of vitamins in excess might not harm the elderly by enabling them to digest more easily and so be tempted to surfeit. Talking of individual adjustments, it was said that a man should reduce his diet when he gave up Rugby football, or, as the case might be, when he found himself out of work. The obvious improvement noted in the condition of the children in crowded areas during the last 20 years was ascribed largely to the greater availability of fresh fruit in these days. The disappearance of summer diarrhœa was credited to pasteurised milk, no mention being made of more efficient scavenging. It was stated that lionesses had more cubs when fed, not as has been usual on the muscles of old horses, but on good fresh meat with fat; that boys of Dr. Barnardo's schools have good teeth because they have to clean them twice daily and can only buy as a relish not sweets but fresh fruit. Mention was made of the importance of giving enough water to maintain the alkalinity of the blood alkali; an egg-farmer was quoted as having said that since giving the hens more water they came more quickly to laying and laid more eggs. This is enough to indicate that the discussion also was full of meat and deserved a full report.

TREATMENT OF PERNICIOUS ANÆMIA.

FURTHER work on the treatment of pernicious anæmia with desiccated defatted stomach is described by C. C. Sturgis and Raphael Isaacs in the *American Journal of Medical Sciences* for November. They employed hog stomach which was finely minced and dried at low temperature, after removal of the mesenteric and fatty layers. It was then defatted by repeated washing with light petroleum and yielded an almost tasteless product, which was given with tomato juice. A hundred grammes of fresh stomach gave 11–15 g. of dried material. Details are given of the successful treatment of 22 patients by this means, and it is stated that 7–10 g. of the dry material were found to be satisfactory as a maintenance dose. In the early stages 10 g. for each million deficit in the red cell count is recommended. An attempt was made to find out which part of the stomach supplied the active substance. Thus one patient, later reacting excellently to whole stomach, did not respond to treatment with the muscular layer, dried and defatted. On the other hand, five patients were treated with mucosa alone, also with practically negative results in four cases, while the fifth had a slight reticulocyte response but no complete remission until whole stomach was given. The authors explain these results by adopting W. B. Castle's hypothesis of an enzyme secreted by the mucosa and acting on muscle protein. In the present case this action is brought about during the preliminary mincing of the fresh stomach which allows the enzyme to make contact with the muscular layer. In the same number of the journal is an account, by J. E. Connery, of the treatment of pernicious anæmia patients with an aqueous extract of fish liver. In making the extract the oil was removed and fraction G, as described by Cohn, Minot, Alles, and Salter, was used. Six patients were successfully treated, details of each case being given. Mammalian meat, liver, and kidney were excluded from the diet. The livers of cod, haddock, and other fish were employed for the extract. Improvement followed comparable to that seen in treatment with mammalian liver.

THE STUDY OF CANCER IN ANIMALS.

THE forthcoming publication of the ninth scientific report to be issued by the Imperial Cancer Research Fund is announced in the annual report of the Fund for the year 1929–30, where Dr. J. A. Murray, F.R.S., the director, summarises the new work which will be included in the volume. The executive committee of the Fund take the opportunity of reminding the public that the Fund has from its inception deliberately devoted its energies principally to the experimental study of cancer in animals. While it is possible to approach certain of the problems of the origin of cancer by a study of the disease in man, the long duration of life in the human species limits the possibilities of successful attack. In every country in the world where cancer is studied systematically, organisations and institutes have been set up on the same

model as this Fund to acquire new knowledge by study on short-lived animals in order to economise time and money. Another reason for the restriction of the main endeavours of the Imperial Cancer Research Fund to the experimental study of cancer under laboratory conditions—and this restriction has not escaped criticism—is the fact that the whole group of tumours which can be transmitted specifically without the intervention of living cells can only be studied at present in the domestic fowl. A further use for experimental animals in cancer research is in trying out suggested lines of treatment. The executive committee regard the publication of new methods of treatment which have not fulfilled the expectations of their authors and of sufferers from the disease as one of the most discouraging features of the world-wide activity in cancer research during the last ten years. They believe that a more extended and critical utilisation of the methods and material made available by experimental cancer research, before advancing to the crucial, time-consuming experiments on man, would not only be the means of avoiding much unnecessary human suffering, but would accelerate progress. This suggestion should be followed up. The early work done under the auspices of this Fund proved conclusively that the new growths occurring spontaneously in animals correspond with those arising in human beings; and later work, in these laboratories and elsewhere, has left no doubt that cancer artificially produced progresses to a fatal issue if left untreated. It seems a plain duty, therefore, to study by preliminary trial on animals any new method of treatment before offering it for clinical application.

BACTERIOPHAGE IN CHOLERA.

ADDITIONAL information on the use of bacteriophage in the treatment of cholera has been sent us from India since the publication of our leading article on Sept. 20th. The work which Prof. d'Herelle began under the auspices of the Indian Research Fund Association has been carried on for a period of three years, now nearly expired, by his pupil and successor in this particular field, Dr. Igor Asheshov. In the period Jan. 1st to Sept. 1st, 1929, Asheshov addressed himself more especially to the laboratory side of this work, and his results [1] are of considerable interest, not only from their bearing upon the immediate practical problem, but from the light they throw upon certain aspects of bacteriophage behaviour. The main fact elucidated by Asheshov and his colleagues is that at least three strains of bacteriophage are necessary for effective and complete lysis of a culture of cholera vibrios. Three such types, named A, B, and C, will, as a rule, accomplish this end. The failure of permanent lysis is, as is well known, due to the emergence of "secondary" resistant cultures from a growth which is under the destructive influence of the bacteriophage. These mutant strains may, however, be susceptible to another strain of bacteriophage, and by the application of this principle Asheshov has selected his three types. These are complementary in their action, in that the secondary cultures resulting from the action of A are susceptible to B; but only partially so, since a second secondary culture will arise, which, in its turn, may be extinguished by C. This looks like selective action upon a heterogeneous population. The strains differ amongst themselves in other characters; thus, while A acts rapidly the duration of its effect is short and secondary cultures soon make their appearance. It is, moreover, somewhat liable to loss of virulence and only active against smooth vibrios, and it seems never to reach so high a concentration in media as do the other two strains. These are more polyvalent in action, lysing both rough and smooth strains and acquiring a high concentration in media. The C strain is less dramatically lytic than either the A or B. In the presence of all three types, Asheshov states that lysis is usually complete, unless the bacteriophages are of low virulence. As an outcome of these experiments it is to be noted that the preparation of a suitable bacteriophage is not as simple as has been widely represented, and that many of the important races are much less stable, and more delicate in cultivation, than was formerly appreciated. Efforts are accordingly, being directed to the establishment of a mixture of bacteriophages which would be at the same time polyvalent in action, rapid in producing lysis, and stable in solution.

In regard to treatment, Asheshov and his colleagues do not take up the position indicated in our leading article. They say: "we cannot do away with saline and alkaline infusions. . . . We continue our experiments in the treatment because we strongly believe that with the modification of our bacteriophage cultures the results will be improved. However we think that the main rôle of the bacteriophage will be not in the treatment of cholera, but in its prevention." This is a weighty pronouncement in the face of d'Herelle's statement that "the administration per os of cultures of bacteriophages possessing a high virulence for the cholera vibrio constitute the specific treatment of Asiatic cholera." [2] Further the belief that this agent should be exclusively administered by the mouth has evidently been abandoned, since Asheshov states that he is experimenting with intravenous injections with encouraging results.

The work of Asheshov bears the stamp of care and caution. If he finally succeeds in establishing the position of the bacteriophage in reference to cholera—which with different reports has varied from that of an almost unfailing specific to that of an inert substance—he will have rendered India no small service.

[1] Asheshov, I. N., Asheshov, I., Khan, S., and Lahiri, M. N.: Ind. Jour. Med. Res., 1930, xvii., 971.

A MEMORIAL TO GEORGE VIVIAN POORE.

THE National Homecroft Association is proposing to erect a memorial to Dr. George Vivian Poore whom they regard as an advocate of homecrofting although he did not use that name for it. Poore certainly deserves to be remembered, for in many ways he was a remarkable man, whether considered as a physician, clinical teacher, author, or sanitarian. At his best there was something compelling about his light-hearted brilliance. Of slight build and delicate physique he possessed a voice with which he filled the largest room with ease, and his after-dinner speeches and other public utterances were long remembered by those who heard them. He was a clear and learned exponent of the principles of forensic medicine, lecturing on the subject at Charing Cross and later being professor of medical jurisprudence at University College. At both the medical school to which he was attached he was a pioneer in the study of medical electricity, but it was by his work as a practical sanitarian that he was best known. His contributions on matters like the hygiene of the street

[2] Indian Med. Res. Memoirs, 1930, No. 14.

the water-supply of country districts, the curious ignorance of sanitary affairs, appeared in our own columns; his clear and incisive style was displayed to great advantage in his book entitled "London, Ancient and Modern, from the Sanitary and Medical Point of View." In his dislike of the water-carriage system of sewage disposal Poore stood almost alone, and as far as town life is concerned he was fighting a losing battle. Pull the chain and let the sanitary authority do the rest has won the day. But in the garden of his house at Andover he raised luxuriant crops of fruit and vegetables by manuring with a mixture of fresh fæces and earth, at the same time proving that the subsoil water remained perfectly wholesome and capable of use as a domestic supply; and he may well have been right in believing that in the country such simple and conservative methods are both feasible and fruitful. He held, as Dr. F. G. Crookshank puts it, a steady and unwavering belief in the national importance of a domestic agricultural economy, or polity, that would render possible, profitable, and attractive a life on the land. Agriculture, Poore declared, is the corner-stone of preventive medicine. His ideals have found a sponsor in the Homecroft Association, which has been trying to put them into practice on their estate near Cheltenham. The memorial, for which they hope to raise sufficient funds from among Poore's old students and friends, is to be a special croft with a building about twice the size of the others, to serve partly as a dwelling and partly as a school. The proposals were outlined by Prof. J. W. Scott at a meeting recently held at Church House, Westminster. Some £250 has already been subscribed and a further sum of £200 promised. All who are interested are invited to communicate with Prof. Scott, at University College, Cardiff.

"STATUS THYMO-LYMPHATICUS."

In 1927 Prof. Major Greenwood and Miss Hilda Woods published a study of status lymphaticus,[1] in which they maintained, first, that to base a diagnosis on the weight of the thymus alone was unreasonable, a conclusion also reached by J. A. Hammar; secondly, that sudden death was no more the fate of people with heavy thymi than of others; and thirdly, that the concept of a status or diathesis explained by a thymic abnormality was "a mere farrago of random assertion and debased tradition." Since then Hammar has published a second volume[2] in which a special chapter is devoted to 44 cases of alleged status lymphaticus. He declares that in these cases the thymus is not only not enlarged, but also fails to show any hyperplasia of the medulla, any accidental involution, or any new formation of Hassall corpuscles. He concludes that cases of "inexplicable" death may be the expression of some physiological abnormality of the endocrine system and that stigmata—a reduction or cessation of new formation in the Hassall corpuscles—may be found in the thymus. These stigmata, however, have only a statistical significance and cannot be applied as criteria in clinical or medico-legal practice. Prof. Greenwood, discussing these findings,[3] examines Hammar's data arithmetically. He forms a table of all the children who died suddenly with negative or trivial post-mortem indications, showing the conditions in the thymus, and a similar table of normal children. These tables show that Hammar's conclusions are amply supported by figures. There is no appreciable difference between the thymus of normals and that of "sudden death" cases, but a count of the Hassall bodies might possibly be of some value for group differentiation, if made with care and accuracy. The variability of this measure is, however, nearly 50 per cent. in a normal series, so that it is obviously useless as an individual criterion. Prof. Greenwood suggests that, now that the thymic theory is exploded, the time has come for some careful work on other organs and functions, in an attempt to elucidate the mysterious condition improperly known as status thymo-lymphaticus.

[1] Jour. Hyg., 1927, xxvi., 305.
[2] Die Menschenthymus in Gesundheit und Krankheit, Leipzig. 1929.
[3] Jour. Hyg., November, 1930, p. 403.

FOUNDATION DAY AT THE UNIVERSITY OF LONDON.

The first official celebration of Foundation Day of the University of London took place on Nov. 28th. The ceremony took the form of a procession in full academic dress through the Great Hall of the University, an impressive charge from the Vice-Chancellor, and the investment of the successful candidates for higher degrees. The company reflected well the prestige of this comparatively young university, which is already great in achievement. Diplomats, statesmen, masters of city companies, and mayors of the boroughs which make up the county of London, as well as those more directly concerned with education or with the arts and sciences, assembled to do honour to the University, and remained to enjoy the pleasant party which followed the more formal proceedings. The guests, who included friends of the new masters of surgery and doctors of science, medicine, laws, and literature, who were presented for degrees, were received, in the unavoidable absence of the Chancellor, Lord Beauchamp, by the Vice-Chancellor, Rev. John Scott Lidgett, the Chairman of Convocation, Mr. S. L. Loney, the Chairman of the Court, Lord Macmillan, and the Principal, Mr. Edwin Deller, LL.D. The Vice-Chancellor in his charge recalled the fact that the centenary of the foundation of the University was approaching, and that it was hoped to celebrate it fittingly in the new buildings at Bloomsbury. Among the doctors of medicine on whom degrees were conferred were Dr. T. Anwyl Davies, who was awarded the university medal in medicine, and Dr. Dorothy S. Russell, who was awarded the university medal in pathology. During the evening the band of the Scots Guards played a programme of music, and in the library reading room a small exhibition of rare and interesting books, including the Prince of Wales' MSS., "Life of the Black Prince" (circa 1385) was on view.

COMPARATIVE PATHOLOGY OF TUBERCLE.

In a monograph published this week by the Medical Research Council,[1] Dr. H. H. Scott sets out the material drawn from post-mortem examinations made by him on 300 fatal cases of tuberculosis occurring amongst Chinese of the labouring class in Hong-Kong and also on a series of wild animals dying of tuberculosis whilst in captivity at the London Zoo. The writer has availed himself of a unique opportunity to make a comparative study of the morbid anatomy of tuberculosis in two groups not hitherto submitted to careful examination. That there is a close analogy between tuberculosis in wild animals living in captivity

[1] Tuberculosis in Man and Lower Animals. Special Report Series No. 149. H.M. Stationery Office. Pp. 270. 4s.

and tuberculosis in human races that have only recently come into contact with civilisation is now well recognised. They are both examples of tuberculosis in virgin soil. Dr. Scott's monograph, therefore, helps to fill a gap, so that we now have a more or less continuous record of the study of tuberculosis from the florid disease as it affects captive wild animals, and the so-called unsalted races at the one end of the scale to the modified disease as it is seen in domesticated animals and the adults of immunised races at the other end. Between these two extremes is the tuberculosis of the unprotected infant both in immunised and non-immunised races. In addition to the valuable post-mortem records of the Hong-Kong infants, an unprotected collection of cases, the monograph is a mine of information for the study of the natural history of the disease, containing as it does a record of many autopsies made by the author, when pathologist to the Zoological Society of London, on ungulates, carnivores, monkeys, birds, and reptiles. There are also two concluding sections dealing with the comparative pathology of tuberculosis and mycosis in birds and in mammals. Dr. Scott finds these two diseases occurring together not as a mycotic implantation on old phthisical cavities but as two separate infections developing side by side in the wild animal, an example of symbiosis which we do not recollect having been dealt with at any length previous to Dr. Scott's monograph.

A COMMITTEE ON MENTAL DEFICIENCY.

THE British Medical Association has decided to appoint a committee to report on the various medical problems presented by mental deficiency, more especially with regard to methods which have been suggested to reduce its incidence and to the facilities for medical education in this subject. The Council of the Association was led to take this step at its last meeting by the receipt of a communication from the National Council of Women in Great Britain, urging that definite practical means should be taken to prevent the propagation of the mentally defective, the idea being the appointment of a Royal Commission of Inquiry. Dr. R. G. Gordon, who moved the appointment of a B.M.A. committee, maintained that mental deficiency was a medical matter, and deprecated the tendency in this country for its discussion to get into the hands of lay bodies, whether educational or social. The problem should, he thought, become the responsibility of the whole medical profession, and he regretted the limited opportunities for education on this subject afforded by the medical schools. Dr. Brackenbury felt that medicine was chiefly concerned with the origin and propagation of mental deficiency; its treatment was not wholly a medical question. There is welcome evidence in various directions of awakening interest in the problem as a whole. In our review columns this week will be seen a notice of a book in which Dr. Henry Herd endeavours to give a general working basis of psychological principles for the student of mental defect. His object has been to provide a book, midway between the medical and psychological, containing sufficient material from both aspects for the medical officer when called upon to examine children whose mentality is below the average. Another review illustrates the extent to which we are indebted to those outside medicine for the stimulus to such study. The late Miss Margaret Macdowall's account of her own experience in the training of mentally defective children has been reissued as a memorial volume. She spent her life in personal study of the special characteristics of mentally defective children, and much of her teaching has now become accepted tradition. The committee of the B.M.A., it may be added, consists of its officers ex officio and the following members: Prof. R. J. A. Berry, Dr. R. Langdon-Down, Sir Ewen Maclean, Dr. R. G. Gordon, Dr. A. F. Tredgold, Dr. W. Langdon Brown, Dr. R. M. Stewart, Dr. E. O. Lewis (Board of Control), Dr. Letitia Fairfield, Dr. H. P. T. Young (H.M. Prison, Wormwood Scrubs), Dr. J. S. Manson, Prof. F. A. E. Crew, Dr. H. C. Bristowe, and Dr. L. A. Parry. In addition a representative is to be appointed by the Society of Medical Officers of Health, and another by the Royal Medico-Psychological Association.

MORTALITY FROM APPENDICITIS.

IN a leading article in our issue of Nov. 22nd we called attention to the high mortality from acute appendicitis and quoted certain figures in illustration. These figures were ill chosen for their purpose, since they are not in fact comparable. Prof. Grey Turner's death-rate of 3·5 per cent. in 2252 cases of his own includes "interval" operations, as is clearly shown in his original letter in THE LANCET.[1] If such operations are excluded we are left with 1339 cases of truly acute appendicitis, with a mortality of 5·7 per cent. The figure given for two London teaching hospitals (6·2 per cent.) also requires revision, for reference to Mr. Love's Hunterian lecture[2] shows that he has deliberately excluded "early cases in which the infection is still limited to the appendix and which are universally treated as a surgical emergency." His object in so doing was to demonstrate that the later cases, if treated with "discrimination and not according to rule of thumb," have a lower immediate mortality and fewer complications or sequelæ than those operated upon as soon as seen.

THE PRESIDENT OF THE ROYAL SOCIETY.

ON Dec. 1st, at the 268th anniversary of the Royal Society's foundation, Sir Frederick Gowland Hopkins, M.D., was elected to the presidency in succession to Sir Ernest Rutherford, O.M. Since 1914 he has occupied the important chair of biochemistry at Cambridge University, and last year his outstanding contributions to the study of accessory food factors won him the Nobel Prize for Medicine in conjunction with the late Prof. Christiaan Eijkman. Sir Frederick Gowland Hopkins became a Fellow of the Royal Society in 1905, and received the Royal and Copley Medals in 1918 and 1926. His latest honour is a further source of pleasure to the medical profession and especially to those who have been in any way associated with him.

THE scientific committees of the British Empire Cancer Campaign have produced a short authoritative work entitled The Truth About Cancer. At the annual general meeting of the body, held at the House of Lords last July, H.R.H. the Duke of York, the President, strongly approved of the intention to issue such a book, which aims at placing before the public a true picture of what relief may be reasonably expected when advantage is taken of the benefits of modern treatment. The work appears as we go to press.

[1] THE LANCET, 1929, i., 465.
[2] Ibid., p. 375.

MODERN TECHNIQUE IN TREATMENT

A Series of Special Articles, contributed by invitation.

CCCXIV.

AFTER-TREATMENT OF SOME COMMON OPERATIONS.

PART III.*

SPECIAL OPERATIONS: GASTRO-JEJUNOSTOMY.

WHEN gastro-jejunostomy is performed for severe pyloric or duodenal obstruction, a common complication is *acute dilatation of the stomach*. To anticipate this and avoid its danger I complete the operation of gastro-jejunostomy, when the stomach is large and atonic, by performing also a temporary jejunostomy, through which the patient may be fed. Acute dilatation in which distension is a prominent symptom may be distinguished from intestinal paralysis by the nature of the vomiting with its repeated regurgitation of foul fluid gastric contents. There should be no delay in passing a stomach-tube and evacuating the large amount of fluid that collects in the stomach, and this should be repeated every few hours.

Diet.—In a straightforward case a patient after gastro-jejunostomy may be fed according to the following scheme.

While he is recovering from the anæsthetic for the first 2 hours ½ oz. of water is given frequently.

Second 12 hours: 1 oz. of such clear fluids as albumin water, panopeptone, glucose and water, and raisin tea is given hourly.

Third and fourth 12-hour periods: 1 oz. of clear fluid and 1 oz. of peptonised milk are taken alternately every hour, if awake.

Fifth 12-hour period: 2 oz. of peptonised milk hourly.

Sixth 12-hour period: alternate feeds of 3 oz. of peptonised milk and 3 oz. of citrated milk every two hours.

Seventh 12-hour period: 3 oz. of citrated milk every two hours.

On the fourth day thin bread and butter, chicken cream, and pounded fish are allowed, in addition to milk, which is citrated until the end of the first fortnight.

On the fifth day cold fresh ham and tongue are added to the diet.

From the fourth day onwards, three times a day and the last thing at night, a teaspoonful of the alkaline powder recommended by H. MacLean is given—i.e., sod. bicarb. one part, mag. carb. (powd.) two parts, bism. oxycarb. two parts.

Cases of perforated duodenal and gastric ulcer are usually suffering from starvation and are fed, after operation, in a similar way.

Hæmorrhage.—A serious occasional complication of gastro-jejunostomy is hæmorrhage. It is, perhaps, not sufficiently known that the most powerful remedy to stop the bleeding is blood transfusion; while preparation is being made for this, hæmoplastic serum should be given subcutaneously. Milk should not be long withheld after such a hæmorrhage, for regular small feeds counteract hyperacidity.

Cholecystectomy.

Operating through a right paramedian incision, I always take the precaution of inserting a small tube near the common bile-duct and bringing it out through a small incision at the outer border of the rectus muscle; this tube is turned daily and there is usually some escape of old blood about the sixth day. If no bile appears the tube is removed at the end of a week, but if leakage of bile occurs the tube should be kept in place for a week after bile ceases to appear. Unless this is done there is the danger of extravasation of bile into the peritoneum in a situation where it is difficult to detect, either the right posterior subphrenic space or the lesser sac of peritoneum; such extravasation occurs insidiously and causes obstruction of the colon and the duodenum, and in a fat patient may be very difficult to get at and drain, owing to dense omental adhesion. After gall-bladder operations especially it is most important that the daily intake of fluids be very large.

Suprapubic Prostatectomy.

An open operation is performed in the advanced Trendelenburg position; this minimises hæmorrhage during the enucleation of the prostate. A large tube is sewn into the bladder and attached also to the skin; collapsible tubing (Paul's) carries off the urine, and can be detached daily for irrigation of the bladder with glyco-thymolin (one drachm to the pint); for this purpose a rubber catheter is passed within the large drainage-tube down to the prostatic bed. The wound remains watertight until the eighth day, when the large tube is removed and a smaller one inserted in its place, a Hamilton Irving box being applied; within the box a gauze bag containing boric crystals should be placed, resting on the skin. From the eighth day onwards, until the wound is too small to admit a catheter, the bladder is irrigated twice daily with concentrated boric solution. On the tenth day a full-sized silver bougie is passed along the urethra into the bladder. Before and after operation, one-grain methylene-blue pills or pyridium gr. ¼ are administered three times a day. When the patient for the first time passes a considerable quantity of urine naturally, it is not unusual for him to have a rigor, and it is wise to warn him of this beforehand.

Primary hæmorrhage from prostatectomy is guarded against by carefully ligaturing or under-running all bleeding-points before suturing the bladder wall, and by keeping up the Trendelenburg position after the patient is put back to bed, and during his transfer from the theatre; packing of the prostatic bed is to be avoided because it encourages sepsis and sloughing. In reactionary hæmorrhage the bladder may fill with clot, so that the mouths of bleeding veins are kept open; in such cases it is sometimes sufficient to empty the bladder of blood and irrigate the prostate bed with boric lotion; if, however, the hæmorrhage is persistent, it is less dangerous to give an anæsthetic and suture the bleeding-points than to allow the patient to lose much blood. Secondary hæmorrhage occurs after the first week and can be prevented in most cases by leaving no remnants of prostate or tags of mucous membrane at the time of operation, and by irrigating the bed of the prostate every 12 hours during the second week. Severe secondary hæmorrhage calls for exposure and suturing of the bleeding vessel.

Epididymitis, even going on to suppuration, used to be a not uncommon complication of prostatectomy about the third week. It is prevented by ligaturing and dividing each vas deferens at the upper part of the scrotum, either at the time of the operation of prostatectomy or of a preliminary suprapubic drainage.

Though the patient is passing water freely by the urethra, there is often some delay in the final closure of the suprapubic urinary fistula. In such a case a soft catheter is tied in the urethra and kept in position for 48 hours, during which time the fistula will usually close. The catheter must not be kept in position

* Parts I. and II. appeared in our issues of Nov. 22nd and 29th respectively.

unchanged for more than two days or it will cause urethritis and infection of the prostate bed. This manœuvre often needs repeating before final success attends it. More persistent fistulæ may be due to infection, to obstruction of the internal meatus by scar tissue, prostatic remnants or a flap of mucous membrane, or to the formation of a phosphatic calculus. Such complications may be prevented by a thorough open operation, but if they occur they must be dealt with by reopening the bladder and dealing with the trouble from above.

For threatening or established *anuria* following prostatectomy, theocin sodium acetate is given in gr. 10 doses every four hours by mouth and 5 per cent. glucose solution intravenously. Rectal therapy and enemata should only be used with great caution after this operation, for there may be enough bruising and œdema of the mucous membrane to make its perforation by a rectal tube or catheter very easy.

After every operation for prostatectomy the patient should drink 100 ounces of bland fluids every day for several weeks.

Operations for Hæmorrhoids.

For hæmorrhoids it seems that the dissection and ligature operation is still the surest means of obtaining a permanent cure, valuable as is the injection treatment in suitable cases. Every tiniest bleeding-point is carefully ligatured and all ligatures are left long, so that at the end of the operation there may be fifty or more ends of catgut protruding from the anus. I therefore never employ the so-called "tell-tale" tube; it causes pain and spasm and in my view increases the risk of hæmorrhage; nor will it certainly reveal bleeding, for it may be blocked by clot, and the only reliable signs of hæmorrhage are the pulse and general condition. Morphia is given hypodermically if the patient has pain, but this is often unnecessary in the absence of a tube; there is no advantage in using morphia in the form of a suppository.

On the fourth day the bowels are opened with castor oil, and before they act olive oil is injected into the rectum. On the fifth, seventh, and ninth days the finger must be inserted up to its base through the anal canal; this prevents adhesions and the stricture that is one of the common complications of an uncared for hæmorrhoid operation. When the last ligature comes away, about the tenth day, healing may be considered to have taken place and the patient may leave his bed.

Amputation of the Breast.

After radical amputation of the breast there are three important points in treatment. It is usual to insert deep mattress sutures of the skin so as to evert the edges of the wound; these should be retained for at least a fortnight, otherwise the flaps will pull apart and separate, or at least stretch the scar. The dead space is drained by a long tube reaching to just below the clavicle and curving round the back of the axilla to its exit through a puncture wound below; it must be borne in mind that considerable muscle exudation goes on for a week or more, and premature removal of the tube allows a collection of fluid to form, especially just below the clavicle. In dressing the case at the end of the operation the arm should be kept from the side by padding at an angle of about 40 degrees; on the second day the arm is set free and the patient is persuaded to place her hand behind her neck and to persevere until she can touch the opposite ear. She can practically always do this, though it seems to her at first to be impossible, and if she carries out this exercise daily she will escape the painful and disabling loss of abduction that used t follow such operations frequently.

Operations on the Lower Limb.

Let us now take, as an illustration of operations o the lower limb, the removal of a semilunar cartilage This operation is performed with a tourniquet, s as to avoid the entrance of blood into the joint an obviate the use of swabbing. Before the tourniquet is removed the dressing is applied, with an even laye of wool all round the limb extending well above an below the joint and bandaged in position wit moderately firm pressure; over this another laye of wool is bandaged with rather firmer pressure The limb is then held almost vertical and th tourniquet removed. The limb is kept as high a possible, with the hip flexed to about 70 degrees whil the patient is returned to bed, and this position i maintained continuously for 10 days, by placin a chair upside down on the bed and covering it wit pillows to provide a firm and comfortable slopin surface. The bulky wool dressing provides sufficien splinting. At the end of 10 days the dressing i removed, the stitches are taken out, and the patien lying on his side, actively flexes his knee beyond right angle. It is almost dramatic to see how easil he does this, as a result of keeping the joint free fro blood and œdema during and after the operatio I allow the patient to walk on the twelfth day an find that recovery of the thigh muscles is most rapi if the limb is used naturally and massage is no employed. A patient of mine played tennis quit happily within three weeks of this operation. Th same principles apply to more serious operations o the lower limb, such as bone grafts, and traumati œdema is so certainly prevented by the exaggerate elevation that I do not hesitate to apply plaster-o Paris over the dressing at the end of the operatio and leave the limb untouched for as much as a mont before even removing the sutures.

C. W. GORDON BRYAN, *M.C.*, F.R.C.S.,
Senior Surgeon to Out-patients, St. Mary's Hospital; Surgeon, Paddington Green Children's Hospital.

THE SERVICES

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Sub-Lt. A. F. Davy to be Surg. Lt.

ROYAL ARMY MEDICAL CORPS.

Capt. J. E. Rea to be Maj.

Lt. R. A. Kennedy relinquishes his temp. commn.

The undermentioned Lts. (on prob.) are confirmed i their rank: J. E. Snow, E. G. C. Darke, and N. H. Lindsay

TERRITORIAL ARMY.

Col. G. L. Thornton to be Hon. Col. R.A.M.C. Units 43rd (Wessex) Div.

Lts. D. S. Middleton, F. Lishman, and G. M. Heiron (lat temp. Surg. Lt., R.N.) to be Capts.

Lt. T. A. A. Hunter, from T.A. Res. of Off., to be Lt.

G. M. Frizell (late Cadet Serjt., Belfast Univ. Contgt Sen. Div., O.T.C.) to be Lt.

G. H. Thompson (late Cadet Corpl., Belfast Univ. Contgt. Sen. Div., O.T.C.) to be Lt.

N. Moulson to be Lt.

J. J. Mitchell (late Lt., R.A.M.C., T.A.), to be Lt.

INDIAN MEDICAL SERVICE.

R. M. L. Still to be Capt. (on prob.).

EXTENSION OF SHEFFIELD ROYAL INFIRMARY.—Prince George recently opened extensions of this hospita which have cost £24,000. The new building, which is o concrete, comprises a casualty department, a theatre massage and dermatological departments, and a self-containe X ray department, with pathological, physiological, an biochemical laboratories.

SPECIAL ARTICLES

GENERAL MEDICAL COUNCIL.

(*Continued from p. 1199.*)

THE Council turned to the consideration of

Penal Cases,

receiving first the report of the Dental Board. According to custom, the Council heard the cases in public and deliberated on them in camera, after which the President announced their finding.

CASES REPORTED BY THE DENTAL BOARD.

The Case of Francis Leonard Harrison, registered as of 13, Bute-street, Treherbert, Glam., "Dentist 1921."

The Dental Board, having considered the conviction of Francis Leonard Harrison, reported as follows: Francis Leonard Harrison had attended on May 14th, 1930, and applied for the adjournment of the consideration of his case until the November Session, in order that he might have a better opportunity of providing himself with legal assistance. His application had been acceded to. Mr. Harrison had not attended the inquiry on Nov. 12th, 1930, nor had he been represented. The following facts had been established by the evidence: Francis Leonard Harrison had, at the York Assizes, commencing on Nov. 19th, 1929, been convicted of the following felony—namely, of embezzling the sum of three pounds, the moneys of Norman Tetlow Williamson, and other sums, and of fraudulently converting the said sums to his own use and benefit, contrary to Sections 17 and 20 of the Larceny Act, 1916, and of the following misdemeanour—namely, of falsifying accounts contrary to Section 1 of the Falsification of Accounts Act, 1875, and had been sentenced to 12 months' imprisonment in the Second Division.

Mr. Harrison had written to the Board craving their indulgence in his absence. He had stated that his case was as follows: (1) His offence was in no way connected with his profession, and was simply a matter of account between employer and employee, and in no way had he abused his professional duties. (2) His employer had done exactly the same thing with his immediate predecessor, that is, engaged him on salary and commission, and then, on his leaving, withheld the money owing for commission. (3) He was 46 years of age, and had spent the whole of his adult life in the practice of dentistry, over 26 years, without a fault of any kind against his professional character. (4) He was incapable of earning a living in any other profession or industry. Mr. Harrison also stated that his children, a boy and a girl, had by their application and industry obtained scholarships to universities, and if he was not allowed to practise they would be unable to continue. It was proved at the trial that the approximate amount of money missing was altogether between £100 and £150. Harrison's commission would amount to about £25.

The Board recommended that the name of Mr. Harrison be erased from the Register. Their solicitor, Mr. Harper, laid the facts before the Council. Mr. Harrison was not present, nor was he represented. The Council decided to direct the Registrar to erase his name.

The Case of John Patrick McLaren, registered as of 10, Wood-street, Doncaster, "Dentist 1921."

The Dental Board, having considered the complaint against John Patrick McLaren, reported as follows:

On Nov. 13th, 1930, the inquiry was held, when John Patrick McLaren attended in person. The following facts were established by the evidence:—

That in or about the month of June, 1928, John Patrick McLaren gave to the Independent Order of Oddfellows (Manchester Unity) Friendly Society (Approved Society No. 123) a fraudulent estimate of dental work to be done for one Thomas Henry Singleton, a member of the said Order, and subsequently certified the completion of work, although not done, and fraudulently obtained payment in respect thereof.

Mr. McLaren admitted to the Board that he had had the money, and expressed his regret. He said that he required it to pay his retention fee to the Board.

The Board considered that the name of Mr. McLaren ought to be erased from the Register. Mr. Harper addressed the Council. Mr. McLaren was not present, and was not represented. The Council directed the Registrar to erase his name.

MEDICAL CASES ADJOURNED FROM PREVIOUS SESSIONS.

The Case of Donald McGregor Stewart, registered as of 5, Waunwen, Nantymoel, Glam., L.R.C.P. & S. Edin. 1917, L.R.F.P.S. Glasg. 1917, who had been summoned to appear before the Council in November, 1929, on the following charge:—

That you were convicted of the following misdemeanours, viz.: (*a*) At the Bridgend Petty Sessions: (1) On Oct. 16th, 1926, of being drunk whilst in charge of a motor-car, and were fined £3 and your driving licence suspended for 12 months; also of driving a motor-car to the danger of the public, and were fined £1; (2) on Oct. 8th, 1927, of being drunk, and were fined 10*s.*; also of using indecent language, and were fined 30*s.*; (3) on Nov. 26th, 1927, of using indecent language, and were fined £3 or 14 days; (4) on June 16th, 1928, of using indecent language, and were fined £2 or 14 days' hard labour; (5) on August 18th, 1928, of being drunk and disorderly, and were fined £1; (6) on May 11th, 1929, of using indecent language, and were fined £3 or 14 days' hard labour; and (*b*) at the Ystrad Police-court; (7) on June 25th, 1928, of using indecent language, and were fined £3.

There had been no complainant in this case.[1] Mr. Stewart had given assurances of future sobriety at the original hearing in November last, and the Council had suspended judgment for 12 months.

Mr. Stewart appeared and confirmed his assurances. The Council decided that his name should remain on the Register.

The Case of Ratilal Shivlal Shah, registered (Colonial List) as c/o Ujamshi S. Shah, High Court Pleader, Rajkot, India, M.B., B.S. 1922, U. Bombay, who had been summoned to appear before the Council on the following charge:—

That, being a registered medical practitioner, you have advertised for the purpose of obtaining patients or promoting your own professionalad vantage, viz.: (1) By the issue of two leaflets in respect of two medicines concocted by you, to wit "Shwetanjan" and "Muktanjan." (2) By calling your private home or dispensary "Dr. Shah's Eye Hospital" or "Dr. Shah's Ophthalmic Hospital." (3) By inserting, or sanctioning the insertion, or acquiescing in the insertion, in the March, 1928, number of a Gujarati paper called *Sharda* of an advertisement of the above-mentioned remedies. (4) By inserting, or sanctioning the insertion, or acquiescing in the insertion, on another page of the issue of the said paper *Sharda*, a portrait of yourself with a laudatory notice below such portrait. And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect.

The Council's attention had been drawn to this case by the Bombay Medical Council. At the former hearing the Council had found the evidence insufficient for a decision.[2]

Dr. Shah was not present but was represented by Mr. H. F. Parfitt, of Messrs. Minett, May and Co., solicitors. Mr. Harper addressed the Council and said that an application by Dr. Shah for restoration had been refused by the Bombay Medical Council, "at present." There were no new facts to lay before the Council, but it had never been clear how these advertisements came to be printed; it did not seem likely that the editor or any layman had made them up.

Mr. Parfitt addressed the Council and summarised a new declaration from Dr. Shah, stating that he had withdrawn the wrappers as soon as the Bombay Medical Council had objected to them. He pleaded an unwitting infringement of the Rule. The editor of *Sharda* had denied on oath that Dr. Shah had had anything to do with the advertisement.

After deliberation the President announced that the Council had found charges 1 and 2 proved to

[1] THE LANCET, 1929, ii., 1254.
[2] THE LANCET, 1929, ii., 1194.

their satisfaction and had decided that these constituted infamous conduct. They had directed the Registrar to erase Dr. Shah's name from the Register.

The Case of Frederic William Barton, registered as of 56, Erith-road, Bexley Heath, Kent, M.R.C.S. Eng. 1889, L.R.C.P. Lond. 1889, L.S.A. Lond. 1889, who had been summoned to appear before the Council on the following charge :—

"That, being a registered medical practitioner, you abused your position by committing adultery with Mrs. Lizzie Catherine Thomas, a widow, with whom you stood and with whose deceased husband you had stood in professional relationship, of which adultery you were found guilty by the decree of the Probate, Divorce and Admiralty Division (Divorce) of the High Court of Justice, dated Jan. 16th, 1930, in the case of Barton *v.* Barton, in which you were the respondent; and that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect.

There had been no complainant in this case.[3] At the conclusion of the hearing the President had announced the Council's decision as follows: The Council are not satisfied with the evidence which has been adduced, and have adjourned this case for six months. The parties will be directed to appear again, bringing further evidence, so that we may come to a decision as to whether the inquiry is sufficient or not. Notification will be sent to the accused practitioner that he should appear in six months, and tender evidence in support of his side of the case.

The Council's solicitor said that Dr. Barton had married Mrs. Thomas and that Mrs. Barton was unwilling to give evidence. There were, therefore, no further facts to be laid before the Council, and the case was dismissed.

TWO CASES OF IMPROPER CERTIFICATION.

The Case of Simeon Moses Cohen, registered as of 1, Ynyswen-road, Treorchy, Glam., M.R.C.S. Eng. 1919, L.R.C.P. Lond. 1919, who had been summoned to appear before the Council on the following charge :—

That, being a registered medical practitioner, you on March 15th, 1930, issued the following certificate, viz :—

The Surgery, Treorchy, 15/3/1930.

I certify that W. King is unable to follow his employment since 15/3/30 owing to illness.

S. M. Cohen,
Surgeon.

Whereas you had not seen or examined the said W. King on March 15th, 1930, which certificate was misleading and improper; and that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect.

The complainants, the Great Western Railway Company, were represented by Mr. Geoffrey Smallwood, counsel, instructed by the company's solicitor. Members of the Medical Defence Union withdrew. Dr. Cohen attended in answer to his notice and was represented by Mr. O. Hempson, solicitor to the Medical Defence Union.

Mr. Smallwood said that the company did not desire to press the case against the respondent, but merely to lay the facts before the Council for their adjudication. Dr. Cohen had a branch surgery at Treherbert. On March 14th a goods guard named William King had sent word that he was ill and could not attend for duty. Later in the day William Venn, the stationmaster, had seen him at the adjacent hotel, obviously in a state of intoxication. He had, therefore, sent a message to King's home that King must produce a medical certificate if he desired to be excused his period of duty, which began at 6 P.M. The next evening Venn had received the certificate which was the subject of the case. He had not been satisfied, and had gone to Dr. Cohen, accompanied by George Harris, traffic clerk of the station. Dr. Cohen had admitted quite frankly that he had not seen King at the time he had sent the certificate. Later on he had sent a letter to the railway company saying that he had been very busy at the time; that he had known King and his wife very well, and believed them to be honest, and that he had refused to sign the other certificates for which he had been asked. Counsel submitted that the certificate was obviously misleading, and was, on the face of it, unsatisfactory because the illness was not specified. The company employed a large number of men and were bound to rely on the certificates of doctors. If they could not much loss of time would be caused, and the discipline of the men would be undermined if they could obtain certificates as this one had been obtained.

Mr. William Venn confirmed the facts stated by counsel and said that Dr. Cohen had remarked that doctors usually endorsed certificates if they were unable to see the patient at the time. In answer to the Legal Assessor, he said that, as King did not belong to the company's provident society, the certificate was of no use to support an application for sick pay.

George Harris, traffic clerk, testified that he had accompanied Venn to see Dr. Cohen. The next day respondent's partner had informed him over the telephone that King was suffering from influenza and heart trouble.

Mr. Charles Simkins, general assistant to the superintendent of the line, said that great reliance and respect were accorded to medical certificates and that if they were improperly given it would interfere greatly with the conduct of disciplinary cases. In answer to the Legal Assessor, he said that he did not think that the provident fund would accept the certificate in question, as the illness was not specified. It might be accepted to excuse a man from duty.

In answer to the President, witness said that the stationmaster would not have been entitled to accept the certificate in question.

Mr. Hempson then called Dr. Cohen, who said that a relative of King's had come to ask him to visit King next morning. The visitor had asked for National Health Insurance and club certificates, and witness had declined to give them. He had then asked for a certificate to release King from work; witness had replied that it was impossible to give a certificate releasing from work unless he had seen the man. He had, he thought, offered to go and see King that night and take the certificate with him, but the messenger had said that King had to report for duty or send up a medical certificate, and that a substitute had to be found before 6 o'clock. There would, therefore, have been no time to see him before the certificate was wanted. The messenger had assured him that King was in bed and ill. Witness had thought the matter over; King had been known to him for years, and he would be seeing him the following morning and no monetary question was involved. The question he had unfortunately put to himself was: did he think the man was genuinely ill? He had neither asked nor received any payment for the certificate. King had been found next morning to be genuinely ill.

In answer to a member of the Council, witness denied having used the word "endorsed." It was not his habit to use the word "illness" when he had not seen the patient, as had been suggested. He regretted extremely that this certificate was laxly worded and agreed with what counsel for the railway company had said concerning the reliance placed by the Company on medical certificates.

The President asked the witness what he meant by the words "I certify," and witness admitted in answer that the words meant that he declared from his certain knowledge that the facts were as he stated.

David Seymour, called for the defence, said that he had visited Dr. Cohen on behalf of King. He had seen King at dinner in a very poor state of health

[3] THE LANCET, 1930, i., 1255.

and King's wife had asked him later on to go and see the doctor. Witness had asked the doctor if he would call upon King, and had asked him for three certificates, which he had declined to give. He had explained that King had to sign on at 6 o'clock and asked him urgently for a certificate from work to enable a substitute to be found. Witness had said that King was in a very poor state of health and in bed. Dr. Cohen had given him the certificate in question and had charged no fee.

Mr. Hempson repeated the regrets expressed by Dr. Cohen and put in two testimonials to general character from Sir Ewen Maclean and Dr. W. S. Thomson.

After deliberation in camera, the President addressed Dr. Cohen as follows:—

Mr. Cohen: I have to inform you that the Council have given very careful consideration to the charge brought against you, and to the evidence adduced in support of it. They have found that the fact alleged against you in the Notice of Inquiry has been proved to their satisfaction—namely, that the certificate in question was given in a lax and careless manner, and was in fact misleading or improper. The Council regard laxity in the giving of such certificates as a grave matter, which may result in injury to your patients or to others, and worthy of censure on the part of the Council, but, in order that you may have time to reconsider your position in this respect, they have decided to postpone pronouncing judgment on the fact found against you until the May Session of the Council in 1931, when you will be called upon to appear before the Council once more. Before that date you will be required to send to the Registrar the names of two or three practitioners, such as those you have supplied us with just now, who will be prepared to testify to your character and conduct in the interval. In due course you will receive a formal notice of the date when you will be required to attend.

The Case of John McGhee, registered as of Station-road, Galston, Ayrshire, M.B., Ch.B. 1923, U.Glasg., who had been summoned to appear before the Council on the following charge:—

That, being a registered medical practitioner, you on Sept. 8th, 1930, signed and issued a medical certificate of cause of death of Dorothy Elizabeth Cawston, certifying the cause of death as pneumonia, and that you were in medical attendance during her last illness, whereas you had not seen or examined the said Dorothy Elizabeth Cawston, which certificate was untrue, misleading or improper. And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect.

The case had been reported by the coroner for the Easington Ward of the County of Durham.

Mr. Harper addressed the Council and pointed out that on elementary principles, Mr. McGhee ought not to have given the certificate, as he had never seen the child. Respondent claimed that, by omitting to fill in the date "last seen by me alive," he had stated that he had not seen her alive. He said that he had filled in "pneumonia" as the cause of death because that had been the opinion of the woman in attendance. Mr. Harper suggested that the real reason for his action had been that he had several times been asked to see the child and had not gone, and, to avoid publicity and reproach, had given a certificate which he had hoped would be sufficiently muddled to slip through.

The respondent, speaking on his own behalf, said that the father of the deceased had never paid the weekly sixpence which, by arrangement, covered medical attendance and drugs for the family. He had deliberately refrained from attending, as the man was in regular work, and had twice explained this to the man. He had known there must be an inquest, but had no information to give the coroner as he had never seen the child. He said he had regarded the certificate as a means of informing the registrar and coroner, as he had indicated that he had never seen her alive by putting a stroke through the printed date in that division. The Registrar had said he could not accept the certificate. Mr. McGhee maintained that if he had wanted to deceive he could have made a better job of it. He had been under the impression that one way to procure an inquest was to return an unsatisfactory certificate.

In reply to the President, he said that he had been in Durham five years and had had dealings with the coroner before. On one occasion he had written a letter detailing the medical history of a patient of his who had dropped dead. The cases had, however, been straightforward, whereas the present case differed in that the girl had never been his patient and the police had sent the father to him for a certificate. He had signed the statement without reading it.

In reply to Mr. Harper, he admitted saying to a messenger from Cawston that he might come to see the child after dinner; it was not true that he had said he would come at once.

After deliberation in camera, the President announced that the Council had found the charge proved to their satisfaction; that they took a very grave view of such conduct but had decided to postpone judgment for 12 months.

CHARGES OF INTOXICATION.

The Case of John Griffith Barrie, registered as of 100, Tulse-hill, Brixton, S.W. 2, L.M.S.S.A. Lond., who had been summoned to appear before the Council on the following charge:—

That you were convicted of the following misdemeanours, viz.: (1) on Nov. 11th, 1925, at the Greenwich Police-court: (*a*) of being drunk whilst driving a motor-car, and were fined 40*s.* and £10 10*s.* costs; and (*b*) of driving a motor-car in a manner dangerous to the public, and were fined £20 and your driving licence endorsed and suspended for the remainder of term; (2) on May 21st, 1928, at the Westminster Police-court, of driving a motor-car in a manner which was dangerous to the public, and were fined £20 and £6 costs (or in default six weeks' imprisonment), licence endorsed and disqualified for six months; (3) on May 21st, 1928, at the Westminster Police-court, of driving a motor-car in a manner which was dangerous to the public, and were fined £20 (or in default six weeks' imprisonment), licence endorsed and disqualified for six months; and (4) on July 22nd, 1930, at the Lambeth Police-court, of being drunk and disorderly, and were fined 15*s.* and 15*s.* costs.

Mr. Barrie attended and was represented by Mr. Pereira, counsel, instructed by Messrs. Le Brasseur and Oakley, solicitors, on behalf of the London and Counties Medical Protection Society. There was no complainant. Mr. Harper, the Council's solicitor, laid the facts before the Council and Mr. Pereira examined Mr. Barrie, who expressed his extreme regret, gave assurances for the future, and said that he had been a total abstainer since July 13th.

Dr. G. K. Reeves and Dr. C. G. Martin testified to Mr. Barrie's abstinence since July and his hard and conscientious work in a large practice. They both lived near him and saw him frequently. Dr. Reeves ascribed his occasional intemperance to overwork.

The President announced that the Council had found the facts proved to their satisfaction, but that, in order to give Mr. Barrie an opportunity of reconsidering his position, they had decided to postpone judgment for a year. Mr. Barrie repeated his assurances of improvement.

The Case of James Rutherford Ratcliffe, registered as of 1, Grange-street, Port Talbot, Glam., M.B., C.M. 1897, U.Glasg., who had been summoned to appear before the Council on the following charge:—

That you were convicted of the following misdemeanours, viz: (1) on March 3rd, 1916, at the County Police-court, Neath, Glamorgan, of being drunk in charge of a motor-car, and were fined 40*s.*; (2) on March 24th, 1919, at the Clerkenwell Police-court, of being drunk, and were fined 10*s.*; and (3) on April 22nd, 1930, at the South-Western

Police-court, of being drunk and incapable, and were fined 1*s.* and 10*s.* 6*d.* costs.

Dr. Ratcliffe appeared in answer to his notice and was represented by Mr. Pereira, counsel, instructed by Messrs. Le Brasseur and Oakley, solicitors, on behalf of the London and Counties Medical Protection Society.

Mr. Harper, the Council's solicitor, laid the facts before the Council. Dr. Ratcliffe had been warned and had twice acknowledged his error. Mr. Pereira called Dr. Ratcliffe as witness on his own behalf. He admitted the charges and expressed his most sincere regret and his intention to abstain from alcohol in future. Mr. Pereira put in two statutory declarations from a doctor and a dentist in Glamorgan, testifying to the respondent's character, and pointed out the lapse of time between the three convictions, and the small fines imposed.

The President announced that judgment would be postponed until May of next year, subject to the usual provisos.

The Case of John Logan Lamond, registered as of 80, Belsize Park-gardens, Hampstead, N.W. 3, M.B., Ch.B. 1916, U.Edin., who had been summoned to appear before the Council on the following charge :—

That you were convicted of the following misdemeanours, viz. : (1) on Nov. 16th, 1926, at Wealdstone (Middlesex) Petty Sessions, of being drunk and incapable, and were fined 5*s.* and 10*s.* 6*d.* costs ; (2) on March 15th, 1927 at Bow-street Police-court, of being drunk in charge of a motor-car, and were fined 30 guineas and 10 guineas costs, or two months' imprisonment in default ; and (3) on July 3rd, 1930, at Bolton (Lancs.) County Police-court : (*a*) of being drunk whilst in charge of a motor-car, and were fined £40 and £4 4*s.* costs, or three months' imprisonment ; (*b*) of driving a motor-car in a manner dangerous to the public, and were fined £1, licence suspended and disqualified for obtaining another for two years.

Dr. Lamond attended in answer to his notice and was accompanied by Mr. Hinde, counsel, instructed by Messrs. Sawyer and Withall, solicitors.

Mr. Harper laid the facts before the Council. Mr. Hinde pleaded that Dr. Lamond was highly strung and nervous, with an impediment in his speech, and suggested that the policeman had been in error. He had only had two or three drinks in a private house, but he was very easily affected by alcohol. Mr. Hinde called Dr. Lamond as a witness on his own behalf ; he promised to abstain from alcohol in future.

The President announced that judgment would be postponed for 12 months.

The Case of Francis Patrick Kennedy, registered as of 111, Cambridge-road, E.1, L., L.M. 1913, R.C.P.Irel., L.M. 1913, R.C.S. Irel., who had been summoned to appear before the Council on the following charge :—

That you were convicted of the following misdemeanours, viz. : (1) on April 20th, 1925, at the Stratford Petty Sessions : (*a*) of being drunk in charge of a motor-car, and were fined 40*s.* (or in default 31 days' imprisonment) and 10*s.* 6*d.* doctor's fee ; and (*b*) of driving in a dangerous manner, and were fined £5, or in default 31 days' imprisonment ; (2) at the County of London Sessions commencing on Oct. 7th, 1930, of being drunk while in charge of a motor-car, and were fined £25 and £25 costs, licence suspended and disqualified for holding a licence for three years.

Dr. Kennedy attended in answer to his notice and was accompanied by Mr. Oswald Hempson, solicitor. Mr. Harper laid the facts before the Council and said that Dr. Kennedy had pleaded "not guilty" to the charge of dangerous driving.

Mr. Hempson called Dr. Kennedy as a witness on his own behalf. He said that he had been reversing his car in order to turn and had driven on to the pavement in this way. He had sold his practice because of the publicity attendant on this case ; he repeated his sincere regrets and undertakings for the future. Mr. Hempson pointed out the long interv between the offences, and said that both were la at night when the doctor was off duty.

The President announced that the Council ha decided to postpone judgment for 12 months.

The Case of Ralph Johnston Tait, registered as of 4 Queen's-road, Leicester, M.B., Ch.B. 1913, U.Edin., D.P.H R.C.P.S. Edin., and R.F.P.S. Glasg. 1920, who had be summoned to appear before the Council on the followi charge :—

That you were convicted at Leicester of the followi misdemeanours, viz. : (1) on Nov. 15th, 1926, of bei drunk and incapable and were fined 10*s.* ; and (2) April 19th, 1930, of being drunk in charge of a motor-car, a were fined £10 and 10*s.* special costs.

Dr. Tait attended in answer to his notice, but w not accompanied by counsel or solicitor. Mr. Harp laid the facts before the Council and Dr. Tait expresse his great regret, and said that he was peculiar susceptible to alcohol. He promised to be absolute teetotal in future.

The President announced that judgment would postponed for 12 months.

The Case of James Gordon Bell, M.C., registered as Ballochmyle House, Dunfermline, L.R.C.P. Edin. 19 L.R.C.S. Edin. 1914, L.R.F.P.S. Glasg. 1914, M.B., Ch. 1914, U.Edin., who had been summoned to appear before t Council on the following charge :—

That you were convicted of the following misdemeanou viz : (1) on Feb. 21st, 1928, at the Sheriff Court, Stirli of driving a motor-car recklessly while in a state of intoxi tion, and were fined £15, licence suspended until date expiry, and prohibited from obtaining another for two ye thereafter ; (2) on May 5th, 1930, at the Sheriff Cou Dunfermline, of driving a motor-car negligently and drivi said motor-car against a tramway car, and were fined current licence suspended, and disqualified from obtaini another for five years from expiry of current licence ; (3) May 17th, 1930, at Edinburgh Police-court, of being dru and incapable, and were fined 15*s.* or ten days' imprisonme

Dr. Bell did not attend and Mr. Harper, layi the facts before the Council, said that he had had gre difficulty in finding him He had eventually receiv a reply from Mrs. Bell, who had said she did n know where her husband was and had not heard fr him for some time. She had suggested an addr which had at last found the doctor, who had repli saying he would be present. Yesterday, Mr. Harp had received a letter from a firm of Edinbur solicitors who had again said that Dr. Bell would present and had sent a written defence. A telegra handed in at Dunfermline, at 12.45 that day, h said that Dr. Bell could not attend owing to illne and asked for postponement. Mr. Harper, howev doubted the bona fides of this belated excuse. T defence pleaded overwork and the results of Dr. Bel war service, for which he had received the Milita Cross and a 60 per cent. disability pension. T President announced that the facts had been prov to the satisfaction of the Council, which direct Dr. Bell to attend for judgment at the May session.

Committee Business.

The Registrar had reported at the meeting of t Executive Committee held on Nov. 24th, 19 that a letter had been received from the Univers of Melbourne drawing attention to the fact that M.S. degree was not included in the list of registra qualifications appearing on page *c* of the Medi Register.

The following resolution had been adopted by t Executive Committee :—

Any person holding the Degree of M.S. of Melbou University shall be entitled to register this degree as additional qualification in the Medical Register.

The Council adopted the resolution.

EXAMINATIONS AND INSPECTIONS.

The report of the *Education Committee* was submitted by Sir Humphry Rolleston, who pointed out that the discussion with the Conjoint Board in Ireland, on the subject of the practice of passing by compensation the examination in general education, was still under discussion. The Queen's University of Belfast had announced that from next year a pre-registration examination in physics and chemistry would be held in October, in order to comply with the recommendations of the Council. Prof. R. P. Johnston, seconding the adoption of this report, pointed out that the standard of the pre-registration examination was much lower than that of the matriculation examination in these subjects, but that there seemed to be no way of exempting from the October examination students who had passed the matriculation.

The report of the *Examination Committee* was submitted by Sir Norman Walker. In accordance with the recommendation of the Committee last May, the reports of the visitors to the examination in medical jurisprudence and public health were published as an appendix, none of the bodies visited having raised any objection to publication. Meanwhile, the visitors had been inspecting the examinations in medicine, surgery, and midwifery, but their reports on these subjects were confidential until the consent of the bodies visited had been received. The inspector in midwifery had reported that the examination in midwifery at the University of London was "not sufficient." It had long been the practice for the inspectors to make a second visit if they were unable to report satisfactorily at one visit, but as this practice was not clearly expressed in the standing orders, the Committee laid before the Council the recommendation: "That the Committee instruct the inspector in midwifery to make another inspection of the examination in that subject held by the University of London in June, 1931."

Speaking on this subject, Dr. H. L. Eason objected to asking for a second inspection when the reason for the insufficiency was not before the Council. In reply, the President said he thought that he might state definitely that the reason was the absence of any clinical examination, a form of test which was now almost universal.

Another part of the same recommendation instructed the inspector in surgery to make another inspection of the examination of the Society of Apothecaries of London, as he had been unable to pronounce their examination sufficient. This raised an interesting point, because the assistant examiners for the Society had been for many years appointed by the Medical Council itself. The point, therefore, arose whether the insufficiency should be dealt with between the Council and the Society or between the Council and its own assistant examiners, whose duty it was under Sec. V. (2) of the Medical Act, 1886) to "secure at the said examinations the maintenance of such standard of proficiency . . . as is required." Lieut.-Colonel C. T. Samman, speaking on this point, assured the Council that the governing body of the Society were with him in desiring to see their examination attain as high a standard as possible; they would meet the Council in any way they could.

The third recommendation put forward by the Education Committee was: "That the President be requested to appoint a deputy visitor to visit and report on the pre-registration examination held by the licensing bodies." Mr. K. W. Monsarrat objected to the term "pre-registration examination," because many licensing bodies accepted other examinations in lieu of a pre-registration examination. He was anxious that these too should come under the ægis of the Council's inspection. The President made it clear that the acceptance of other examinations rested entirely with the licensing body; that the registrar had no power to accept any examination unless it was already accepted by a licensing body, and that it would be possible for the inspector to inquire what examinations were accepted, and to report on their scope. Sir William Taylor was anxious to have some report on the courses of study leading up to the examination, but the President said that the Council had no power to inspect pre-registration teaching. Prof. A. F. Dixon drew attention to cases where the pre-registration examination was the only examination in chemistry and physics held in a teaching centre. Sir William Taylor asked whether it would be possible to find one visitor competent to inspect both physics and chemistry, and the President replied that, judging by previous experience, it would be possible.

THE PHARMACOPÆIA.

The President introduced the report of the *Pharmacopœia Committee*. The number of copies of the British Pharmacopœia sold in the year ending Nov. 21st, 1930, was, he said, 1733, a slight decrease on the previous year. The Pharmacopœia Commission had continued its work of writing and revising monographs, and a revision of posology had been completed. The Pharmacy Subcommittee were engaged in devising formulæ for new preparations, and a new edition of the British Pharmaceutical Codex was in preparation. The Commission had established friendly relations with the Committee of Revision of the United States Pharmacopœia. The Pharmacopœia Committee had approved the inclusion in the new Pharmacopœia of monographs on insulin and irradiated ergosterol.

MATERNAL MORTALITY.

The Council discussed the recommendations which a joint committee of the Education and Examination Committees had prepared after considering the interim report of the Departmental Committee on Maternal Morbidity and Mortality, which contains the observations of that committee on the Council's recommendations adopted in 1923, and certain recommendations for the education of the medical student in obstetrics. The Council, after making a few verbal alterations, adopted the report of the joint committee, and directed that copies of the proposed communication be sent to the Lord President of the Privy Council, and to each of the licensing bodies for comment.

The communication, as amended, is as follows:—

The Council, being fully convinced of the need for progressive improvement in the teaching of obstetrics, readily complies with the request of the Privy Council to give the Report of the Departmental Committee on Maternal Mortality and Morbidity prompt and favourable consideration, and appoints a joint committee consisting of all the members of its Education and Examination Committees to consider and to present a report thereon to the Council during the present session.

It is within the knowledge of the Council that some of the licensing bodies are not successful in ensuring that all the present recommendations of the Council in respect of the training of students in midwifery are in fact being carried out.

In connexion with this it should be borne in mind that the decennial inspection of the three final or qualifying subjects is now in progress, and that the reports of the inspector of midwifery hitherto received contain much valuable information as to the extent to which the recommendations of the Council (1923) are observed by the different licensing bodies. It is in the opinion of the Council desirable to await the

completion of this inspection before further or amended recommendations are issued by the Council.

With the proposal to concentrate the teaching of obstetrics, gynæcology, and closely related subjects into a continuous period of six months the Council is favourably impressed.

The proposal to increase the duration of residential study in a maternity hospital or maternity ward to two months is approved by the Council, and where practicable should be carried out forthwith.

When the Council is satisfied that all the licensing bodies are able to ensure the provision of 20 obstetric cases for each student, the figure specified in the existing recommendation, the question of increasing this number to 30 can and will be considered by the Council. At present the Council is inclined to lay more weight on a longer period of residence that on an increased number of obstetric cases.

The Council in its present recommendation (1923) has recognised the importance of adequate instruction in ante-natal care, and welcomes any proposal which will increase the facilities for such instruction now accessible to students.

Pending the completion of the inspection of the qualifying examinations in midwifery, the Council considers it advisable that the several licensing bodies should have an opportunity of considering and of commenting upon the recommendations of the Departmental Committee, having special regard to the practicability of introducing all or some of the changes proposed into the medical curriculum.

Recommendation.—That a copy of this report be sent to each of the licensing bodies, with a request that before May 1st, 1931, its comments thereon should be sent to the Medical Council.

The Council also directed, on the motion of Dr. Brackenbury, that a letter should be addressed to the Minister of Health requesting that students be admitted to the new maternity wards which will be available to local authorities under the Local Government Act, 1929.

The joint committee reported that they had not yet been able to devote adequate time to their consideration of the report of the Society of Medical Officers of Health on The Place of Preventive Medicine in the Medical Curriculum, which they describe as "an important and interesting document."

MEDICINE AND THE LAW.

The Dog in the Car.

A RECENT decision of the Court of Appeal will have interested the many medical practitioners who are owners both of motor-cars and dogs. One evening, 18 months ago, a man parked his saloon car with its back to the kerb in a street at the rear of a well-known shop in Oxford-street. Inside the car was his Airedale dog. As another man walked past the back of the car, the dog (which was said to have been barking and jumping about in the car) smashed the glass panel. A splinter of glass entered the eye of the passer-by; operation was necessary, and four days later the eye was removed. The victim of the accident claimed damages against the owner of the dog, alleging various forms of negligence. The defendant, he argued, was at fault in parking his car where he did, in placing the dog inside, in leaving the car and dog unattended on the public highway, and in failing to tie the dog up in a safe and suitable manner. The case was tried before Mr. Justice Talbot and a common jury, and the plaintiff was awarded £2000. The Court of Appeal has reversed the decision, and has ordered judgment to be entered for the dog-owner. Animals, said Lord Justice Scrutton, may be divided into two classes. There are the wild animals, like tigers and gorillas, which are likely to be dangerous in themselves; a man taking out such an animal is responsible for the damage which it does. In the second class come the animals like dogs and cats, which are ordinarily kept in comparative freedom. There is no obligation to keep the latter class under control; unless the owner is aware that the dog cat has some vicious tendency, he is not liable f the damage it may do. This particular Aireda terrier, as Mr. Justice Talbot had said, had a hither blameless character; the owner therefore was n responsible for the accident. Hundreds of peopl said Lord Justice Scrutton, leave dogs in motor-car and nobody had ever heard of such an accident befor The defendant left his car with an apparently perfect well-behaved dog inside; something then happen which had never happened before. This was n negligence; there was no evidence on which t jury could find for the plaintiff.

Motor-car Insurance.

In another case concerned with motor-cars t Court of Appeal has upset a decision of the cou below. The owner of a car was insured under policy which contained a not too clear clause coveri the use of a substituted car. Having occasi to require repairs to the car, and finding that the co of the repairs would be considerable, the motor decided to buy a fresh car of the same type, handi over the old car in part payment. He met with accident in the new car and he sued on the polic The judge at trial took the view that the new c of the same type could be deemed a substituted c within the cover of the policy. The Court of App has now decided that this interpretation is wron The motorist was insured in respect of a particul car and, when he gave up the ownership of it, ceased to have an insurable interest under the polic

It is possible that this, and the preceding ca will be taken to the House of Lords. If so, the l word has not yet been said. The fact that a Hi Court case may thus undergo two successive revisio has been commented on lately by correspondent who think that litigation is too slow, too dear, and t uncertain. If there is a strong Court of Appeal, the critics remark, a further appeal to the House Lords is altogether unnecessary.

Arsenic in Sweets.

Remarkable evidence was given at Stoke-o Trent during criminal proceedings against two m respectively described as a sugar boiler and a sw manufacturer. The actual charge upon which th were convicted was that of powdering sweets w arsenic. According to the prosecution the Food a Health Department of the Stoke City Council beca aware early in September of an outbreak of illn due to the eating of sweets. The sweets were fou to be heavily impregnated with arsenic. On Sept. every bottle of sweets made by this particular ma facturer was seized and sealed to prevent furth distribution. The sugar boiler had premises Tunstall, where a box was found containing nea a hundredweight of arsenic. He said he hones believed it was French chalk. The sweet manufactu had said he was short of dusting powder and powder from the box was furnished. It appea that in the yard near the sugar boiler's premi there were works where enamelling was do Mr. A. E. Johnson, the city analyst, said the fi sweets he analysed contained grs. 77 of arsenic pound; another sample of cough sweets contai grs. 82. The maximum permissible was gr. 1/100 Of two samples of dusting powder, one contained per cent. of arsenic, the other consisted entirely arsenious oxides. Fortunately, no deaths resulte the poison being in such large doses, the consequ vomiting seems to have eliminated it before it absorbed. The magistrate, in fining the accu

£25 and £15 respectively, said that the sugar boiler had not taken the slightest trouble to find out if the powder was fit for the purpose. Even if the man thought it was a proper powder previously used in his own business, it was grossly careless to use it without some precaution to see whether it had been tampered with. There was no substantial ground for thinking it to be French chalk. As for the sweet manufacturer, if a person, without the slightest precaution, used material which was injurious to health, and intended that, when the operation was completed, the article should be sold, that was an offence.

Had a civil action been brought against the two defendants for damages, they could hardly have avoided an adverse judgment. There was a strong prima facie case of negligence; in the legal phrase *res ipsa loquitur*. Had death resulted and been followed by criminal proceedings for manslaughter, it would, of course, have been necessary to prove a higher degree of negligence than in a civil action. One may expect that some of our enterprising municipalities will now seek powers by Local Act to keep their medical officers in close touch with the premises where sweets are manufactured. The present powers of inspection are inadequate if the local authority does not know what premises are being thus used. The provisions in many Local Acts for the registration of manufacturers and premises used for the purposes of ice-cream, potted and preserved meat, food made from fish, &c., could, perhaps, be extended.

The incident at Stoke-on-Trent will stimulate fresh criticisms of the ease with which arsenic can be handled and obtained. It is scandalous that a box containing a hundredweight of arsenic could be left about without any supervision or indication of its nature. Local Acts (for example, Section 50 of the recent Manchester Corporation (General Powers) Act) are beginning to include penalties on people who fail to take proper precautions to prevent danger from the presence of disused petroleum vessels in premises. It seems reasonable to deal with potential risk of death from poisoning as drastically as with the danger of death from fire.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

DEATH OF PROF. FUCHS.

At the age of 79 Prof. Ernst Fuchs, one of the best-known ophthalmologists in the world, died on Nov. 22nd after an attack of angina pectoris. He was a man of unusual qualities as student, teacher, and healer. A pupil of the famous surgeon Billroth, Fuchs early turned his attention to the new field opened up by the invention of the ophthalmoscope. He became assistant to Prof. Arlt, then the leading ophthalmic surgeon in Europe, and soon was called to Liége in Belgium to take charge of the eye department. There he published his famous book on "The Etiology and Prevention of Blindness." In 1885 he returned to Vienna to succeed Prof. Jäger, and in the small eye clinic of Vienna, as it appeared at that time, originated the series of clinical, physiological, and histological discoveries which was to make the clinic a Mecca for the specialty. Fuchs was the true builder of ocular morbid anatomy. He was an unsurpassed teacher, and his Text-book on Diseases of the Eye has become, so to say, the Bible of ophthalmology. It has been translated into all the important European languages, and also into Japanese and Chinese, and patients and surgeons from every continent flocked to his clinic. He was called to China, to Egypt, India, Russia, and Spain to operate there. When, at the age of 70, he retired from his clinical post, he took to travelling all over the world, and even then made important contributions to our knowledge of foreign eye diseases. He turned his attention to the infections of oriental countries, and in his eighth decade studied conditions in Egypt and Asia Minor. As a teacher of general practitioners, Fuchs imbued all his pupils with the necessity of commanding sufficient skill to treat disorders of the anterior part of the eye. The other conditions, he taught, should best be handed over to the specialist.

DISSECTING-ROOM MATERIAL.

The problem of obtaining enough bodies to enable students in the first two and a half years of the medical curriculum to do all the necessary dissecting work has for several years been very serious here. Formerly the regulations of the hospitals were sufficient to secure an adequate supply. But now not only has the number of medical students more than doubled (compared with the years 1900–10), but the number of suitable bodies has much diminished. The law stipulates that all corpses not claimed by their relatives or friends belong eo ipso to the Anatomical Institute, if the patient dies in one of the State hospitals. Of late, however, it has become the custom that pious societies of all creeds represented in this country should take care of hospital patients reported to be friendless, and claim their bodies for a religious interment. This claim must be complied with. These societies work principally in Vienna and Graz, where there are large universities. Therefore it has become the routine practice that the provincial State hospitals supply the dissecting institutes with bodies not claimed. Furthermore in every case of suicide there is a partial dissection in the forensic institute, and if not claimed the body is usually sent to the "Anatomy" and there stored away. The law permits the sale or bequest of one's own body during lifetime, but this is rarely done. However, the vaults of the institute now contain enough bodies to keep it running for two years if the restriction of first-year medical students, as now in force, is adhered to. The restriction consists in admitting for dissecting studies only those students for whom places are available (about 250). In the first line, Austrian-born students are admitted, and only if all these are placed can foreigners be taken.

THE CAMPAIGN AGAINST TUBERCULOSIS.

The Ministry for Public Health in Austria has recently published an account of the institutions engaged exclusively in fighting tubercle. They fall into four groups—welfare centres, sanatoriums, convalescent homes, and tuberculosis hospitals. At present there are 87 welfare centres, each served by two or three competent lung specialists, assisted by one to four nurses. The object of these centres is to discover cases of tuberculosis, to help the patients to get suitable treatment, and to look after their health after treatment in one of the special institutions. The nurses follow up the cases at their homes and advise the family in matters of hygiene and prophylaxis. The 45 special sanatoriums are under the supervision of the Board of Health; 33 of them, with 4970 beds, are intended for tuberculosis of internal organs; and 12, with 942 beds, for surgical cases. It

may be noted that in the first group we find 621 beds available for men only, 1542 for women only, and 920 for children only; the remainder can be used as required. In the surgical group, 72 beds are for men, 88 for women, and 497 for children, whilst the remaining beds are in hospitals, where they are used as necessary. The number of convalescent homes is also 45. They contain 5120 beds between them, of which 168 are intended exclusively for male adults, 519 for female adults, 1360 for male adolescents, 705 for female adolescents, and 1025 for children. The rest are for both sexes and all ages. Finally, we have the hospitals for tuberculous patients—109 of them, with a total of 4017 beds. Of these, 3069 are open for pulmonary tuberculosis, and 948 for surgical cases. These hospitals are partly private (run on the profit system), but most are owned and kept by the State or the county councils.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

NIGHT NOISE.

My recent account of the action of the Touring Club of France in appointing a special noise commission has led some of my readers to assume that Paris is a noisy city. There is, in fact, little probability of a *brigade du silence* coming into effect. For some time past all police agents in the city have been entitled to put a stop to nocturnal noise, and between 1 and 7 A.M. automobiles which transgress the permissible limit of nocturnal noise are liable to prosecution. Paris is, in fact, becoming increasingly quiet during the hours of night.

THE CLOSING OF BROTHELS.

Two doctors of the sanitary service of Lyons, Dr. M. Carle and Dr. Léon Lacassagne, have set out at length in the *Siècle Médicale* what they regard as the moral consequences of the suppression of the *maisons closes* or *maisons de tolérance*. Although sexual indulgence may have become more difficult for groups which they neatly summarise as *le passant, le troubade, l'ouvrier*, it is not less apparent to them that the torrent of desire diverted from its canalised channel has overflowed its banks, submerging the frail virtues encountered on its passage. From the moral as well as the sanitary side they regard the benefits of the recent legislation as more apparent than real. There may be fewer segregated women, but there will be more prostitution in the ranks of the small employees; venereal disease in clandestine form is increasingly shown by figures both public and private. Our authorities, they say, cannot afford to omit the police supervision of prostitution. A little city like Grenoble may close its brothels and dismiss its local police, but a Congress resolution is little more than a political gesture. What applies to the small town cannot be transferred to the large, and the experience of Strasbourg may have a lesson for other urban centres. If the brothel is dying it is not the law that is killing it; in Carle and Lacassagne's opinion it is simply overwhelmed by the competition of the *maisons de rendezvous*. Prostitution is the most complicated of our social problems. Paris has its closed houses, but its streets are fairly clean. Parisians are not unaware of the little flats round Leicester-square and the solicitation at street corners. If the Londoner retorts that many of those concerned are of French nationality, he may be reminded that the Paris *police des mœurs* does not accept foreigners.

THE LATE PROF. GLEY.

You have noted the death of Prof. Gley, one of our leading physiologists, after surgical operation. He succeeded Marey at the Collège de France, and devoted his whole life to physiological research and especially to endocrinology. He was not only a great scientist, but he had an exquisite knowledge of classical and modern literature. His speeches at medical meetings were awaited with pleasant anticipation, for he could be both passionate and coldly intelligent, and his delivery was easy and audible.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED NOV. 22ND, 1930.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 116 (last week 107); scarlet fever, 2297; diphtheria, 1593; enteric fever, 28; pneumonia, 828; puerperal fever, 38; puerperal pyrexia, 129; cerebro-spinal fever, 13; acute poliomyelitis, 12; encephalitis lethargica, 16; dysentery, 8; ophthalmia neonatorum, 96. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Nov. 25th–26th was as follows:—Small-pox, 221 under treatment, 3 under observation (last week 186 and 1 respectively); scarlet fever, 1938; diphtheria, 2208; enteric fever, 15; measles, 82; whooping-cough, 107; puerperal fever, 24 (plus 9 babies); encephalitis lethargica, 120; poliomyelitis, 1; "other diseases," 47. At St. Margaret's Hospital there were 11 babies (plus 4 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 2 (0) from enteric fever, 40 (0) from measles, 6 (0) from scarlet fever, 10 (2) from whooping-cough, 30 (3) from diphtheria, 71 (12) from diarrhœa and enteritis under two years, and 49 (6) from influenza. The figures in parentheses are those for London itself.

The fatal cases of enteric fever outside London were reported from Stoke-on-Trent and South Shields. Measles accounted for 13 deaths at Hull, 5 at Bristol, 4 at Liverpool, 3 each at Birmingham and Swansea. Liverpool reported 5 deaths from diphtheria. Fourteen fatal cases of diarrhœa occurred at Liverpool, and 6 at Birmingham. There was no death from small-pox during the month of October last in the areas outside the great towns.

The number of stillbirths notified during the week was 257 (corresponding to a rate of 43 per 1000 births), including 53 in London.

DEATH FROM SMALL-POX.

A fatal case of small-pox reported from Wood Green was that of a man, 50 years of age, employed as a teacher of English to foreign students in an institution in London. He complained of sore-throat on Nov. 22nd; the next day he was much out of sorts with pain in the back, limbs, and head. On Nov. 24th he called in a doctor who found a temperature of 102° F. and symptoms suggesting a severe attack of influenza. The following day he was rather worse, rambling at times in his speech. On Nov. 26th a profuse papular rash appeared on the face, trunk, and, to a less extent, on the limbs; this was suggestive of small-pox but not typical in character or distribution. As the patient was then extremely ill, Dr. M. Manson, medical officer of health, who saw him, advised removal to South Wharf as a suspected case of small-pox. On admission there he was transferred to the Joyce Green Hospital, Dartford, where symptoms of cerebral trouble became very definite, and he died 24 hours later. Permission for post-mortem examination was refused. The cause of death entered on the certificate was: (1) cerebral thrombosis; (2) small-pox. The man had been vaccinated in childhood but probably not since then.

PUBLIC HEALTH SERVICES

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are 1929 statistics of three counties :—

Name of district and estimated (R.-G.) mid-year population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and neonatal mortality.	Young child (1–5 yr.) mortality.	Maternal mortality from childbirth.
Lancashire .. (1,811,700)	14·1	14·0	0·76	1·41	3·4	2·5	84/—	44	4·9
West Riding of Yorkshire (1,528,800)	16·7	13·6	0·87	1·28	3·0	2·3	89/38	53	5·2
Essex .. .. (1,110,400)	16·3	11·2	0·76	1·36	2·1	2·1	53/—	26	3·2

Registered stillbirths per 100 live births : Lancashire 4·9, West Riding —, Essex 3·4.

Lancashire.

Dr. J. J. Butterworth's report contains, as usual, an enormous mass of detailed information, mostly in tabular form, with respect to the 19 municipal boroughs, 81 urban districts, and 19 rural districts which make up the administrative county. Largely owing to the influenza epidemic there were nearly 4000 more deaths than in the previous year. The excess deaths were chiefly attributed to influenza, heart disease, pneumonia, and bronchitis ; and the only age-periods which showed no excess were from 5 to 25 years. Little use has been made of the Housing (Rural Workers) Act. Up to June 30th, 1930, £1536 in grants had been promised in respect of 16 dwellings and £936 had actually been paid in respect of 10 dwellings. During 1929, 576 outside complaints of tuberculous milk were received and in each case a veterinary surgeon retained by the county council and a sanitary officer visited the farm. The facts found were reported to the county agricultural department and the ultimate result is not given. There are about 7224 dairy farms and the number of cattle is approximately 95,000. The clean milk competition promoted by the County Milk Recording Society, assisted by the public health department, only attracted 10 competitors. The number of licences issued for Certified milk by the Ministry is 5.

Of 4993 samples examined under the sale of Food and Drugs Acts, 2·8 per cent. were returned as adulterated. There was a drop in the percentage adulteration of articles other than milk and a slight increase in milk adulteration. Mr. G. D. Elsdon, the public analyst, commenting on the claim that the percentage of fat is seriously diminished when the cows are first put out to grass, shows that the reduction is only slight. Of over 48,000 samples of milk examined during the years 1913–29, the average composition for the year was 3·68 per cent. of fat and 8·91 per cent. of solids-not-fat. When the composition is examined month by month it is found that the average fat percentage for April is 3·63 ; for May, 3·59 ; for June, 3·55 ; for July, 3·57 ; for August, 3·66 ; and for September, 3·75. As is well recognised, the assumption that milk contains added water is based on its content of solids-not-fat. In 1921 Hortvet (U.S.A.) devised an apparatus for the detection of added water in milk, which depended on the constancy of the freezing-point of genuine milk. Mr. Elsdon has been investigating the reliability of the Hortvet apparatus during the year and up to the present his work confirms its value. Of 58 samples of water examined as to potability, 4 out of 10 from shallow wells were unsafe or doubtful and 2 unfit ; 11 out of 16 from deep wells were classed as unsafe or doubtful ; 2 out of 4 from springs, 1 out of 3 from streams, and 1 out of 14 from an upland surface source were also put in the same category.

There were 406 notifications of small-pox and 3 deaths. Scarlet fever cases numbered 6205 and the deaths 34. At Oswaldtwistle two children were removed to hospital leaving two at home. After six weeks in hospital the patients returned home and the two other children contracted the disease. As a result the local medical officer of health adopted the eucalyptus oil method and up to now has had 86 cases without a secondary case. At Preston (rural) four families with the same milk-supply were attacked. When the farm was visited a girl was found, who was desquamating, with a typical scarlet fever tongue, following a sore-throat, and her brother had been ill seven days previously. In Prestwich there was a school epidemic caused by scholars attending school whilst undergoing very mild attacks. The cases of diphtheria numbered 1620 and the deaths 120, giving the high case-fatality of 7·4 per cent. At Wigan (rural) an outbreak of enteric was attributed to a carrier, and an outbreak at Oswaldtwistle to drinking water from a stream grossly polluted with excretal matter. In 1924 there were 299 notifications of encephalitis lethargica and 103 deaths. The numbers have slowly declined and in 1929 there were 88 notifications and 94 deaths. The notification figures for the last ten years evidently underrate the number of persons affected. There was a progressive decline in the county death-rate from pulmonary tuberculosis, from 0·77 in 1922 to 0·58 in 1928, but last year there was a set-back to 0·60.

Twenty-three years ago 83 per cent. of the midwives were untrained ; now, 87·3 per cent. are trained. The county council is the local supervising authority for midwives in the whole administrative county, and directs the maternity and child welfare work in 79 out of the 119 districts ; it conducts one antenatal clinic at Litherland and contracts for the use of three antenatal clinics at Widnes, Chorley, and Eccles. The council also arranges for the use of 20 maternity hospitals and for the admission of antenatal cases to hospitals at Blackburn, Burnley, Liverpool, and Fulwood. The orthopædic scheme has been extended by the inclusion of one county borough, four boroughs, and three urban districts. 245 crippled children were admitted to Biddulph County Council Hospital, where 202 remedial operations were performed. The out-stations treated 2513 children.

West Riding of Yorkshire.

Dr. T. N. V. Potts, who presents the report, did not take over the duties of county medical officer until 1930. Dr. J. R. Kaye retired after 33 years' service in June, 1929, and Dr. P. L. Sutherland was acting medical officer for the remainder of the year.

The influenza epidemic showed its effect on the mortality from heart and respiratory diseases and exacted a toll especially in the earliest and later age-groups. Infant mortality was 27 higher than in the previous year. The general death-rate was the highest recorded since 1919. Dr. Potts thinks the campaign against tuberculosis will be much strengthened by the provision of the new sanatorium of 300 beds at Scotton Banks and the installation of seven X ray plants at the principal dispensaries. As the result of continued trade depression a definite impairment in the nutrition of mothers and children attending the centres was noted and greatly increased quantities of dried milk were issued. A serious epidemic of enteric fever was recorded at Honley. There were 27 cases with six deaths, and the origin of the outbreak appeared to be connected with the contamination of wells by leakage of sewage into an old culvert. Dr. Potts appeals to all local authorities,

who have not yet done so, to adopt by-laws for smoke abatement in order that there may be uniformity in administration throughout the Riding. Some antenatal work is in operation at about half the child welfare centres, and Dr. Potts suggests that there should be a few centres with more complete equipment or maternity homes with an antenatal department manned by specialists of recognised consultative standing to which difficult cases could be referred from the ordinary centres.

Essex.

Dr. William Bullough says the death-rate was the highest since 1919, the increased mortality being largely due to influenza, diseases of the respiratory system, and heart disease. The infantile mortality only showed an increase of two. The new sanatorium at Black Notley (184 beds) was opened by the Minister of Health on April 26th, 1930, and X ray facilities have been extended and fully utilised. There has been some difficulty in maintaining a full staff of health visitors during the year. The care of the crippled children has been furthered by the appointment of a whole-time orthopædic masseuse.

The 1929 clean milk competition was limited to farms which had never received an award, with the aim of extending this educative influence to new entrants. There were 17 competitors. The county council have passed resolutions in favour of amending the nomenclature of designated milks, and of a penalty for the sale of milk which does not conform to a prescribed standard of cleanliness. The samples of milk examined for tubercle were 166 with 15 positive. The percentage of 9·6 compares with 7·0 for the previous years. Dr. Bullough thinks the effort to deal with unfit houses is meeting with more success. Some of the sanitary authorities are considering the provision of houses within the means of the lowest paid worker. Several old and derelict cottages have been most successfully renovated under the Housing (R.W.) Act, 1926. Up to December, 1929, the number of cottages reconditioned under this Act was 104.

The low rainfall of the first nine months of the year drew special attention to water-supplies. Twenty-one per cent. of the parishes in rural districts have no public supply and depend upon shallow wells, rainwater, springs, and ponds. The public supplies in 6 parishes failed wholly or partly and in 23 parishes were depleted, whilst in 244 the supply was maintained. It is hoped that an improvement will result from the power given to the county council under the Local Government Act, 1929, to contribute to the expenditure by local sanitary authorities on water-supplies.

It is considered that the nuisance caused by the dumping of London refuse on the northern bank of the Thames has reached a more hopeful stage. It is 20 years since Dr. J. C. Thresh made his first complete investigation and report on this matter.

MENTAL HOSPITAL REPORTS.

Of the two KENT COUNTY MENTAL HOSPITALS that at BARMING HEATH had 1923 patients in residence at the end of last year and there is need for further accommodation, preferably a new admission villa. Much valuable room is still occupied by mental defectives and old chronic cases who would be better off elsewhere. The recovery-rate was 32·2 per cent. and 74·1 per cent. of the recoveries took place after less than a year's treatment. The death-rate was 7·7 per cent. There were two cases of erysipelas and eight of dysentery, and a small epidemic of influenza in the spring. There has been a great increase in the work of the occupations department, and on an average 65 per cent. of the men and 90 per cent. of the women are engaged in some kind of work. A new occupations centre for women came into use last spring and the movement is more than self-supporting, the profits serving to provide trips to the sea, the Zoo and the circus, and visits to town and picture theatres. Parole is freely given. Installation of electric light is under consideration. Fifteen male nurses work on the male side and 41 attendants and 46 nurses are certificated or registered. A proposal is on foot to open an out-patient clinic at the hospital. There were 1375 patients at the CHARTHAM DOWN HOSPITAL at the end of last year and there also the question of accommodation is becoming acute. Mental defectives are still cared for in the hospital. There was a severe epidemic of influenza in the spring with 30 deaths. Although vigorous malarial treatment is given for general paralysis, many of the cases are admitted so late that the results are disappointing. Tryparsamide bismuth, the Starke treatment, and "Sulfosin Leo" have been tried, with varying success. An investigation on blood pressure has not revealed any relation between the readings and mental disorder. A number of patients who did not seem to have benefited from their food are being treated with insulin with excellent results, but collosal calcium has not given any appreciable benefit in epilepsy. The recovery-rate was 36 per cent. and the death-rate 11 per cent. Parole is used extensively and it is hoped to have wireless in all the wards by next Christmas. The pathological department carried out a large number of routine investigations and an operating theatre is in course of construction. Craft work and drill classes are held twice weekly by voluntary helpers. Plans for a nurses' home are under consideration; 50 male and 27 female nurses are certificated or registered. A consulting ear, nose and throat specialist has been appointed to visit fortnightly.

The CITY OF LEICESTER MENTAL HOSPITAL at WEST HUMBERSTONE had 986 patients on its books on March 31st last. The recovery-rate for the year was 40·7 per cent. and the death-rate 6·6 per cent. Malarial treatment for general paralysis is being continued. There were seven cases of dysentery and one of typhoid. Two enteric carriers were found and in one the gall-bladder was removed to clear up the condition. In addition to a number of routine examinations, the laboratory has investigated the Vernes test and report in favour of it, as being less liable to human error than the Wassermann. The positive Wassermann appears to be more reliable than the positive Vernes, but the negative Vernes more reliable than the negative Wassermann. Parole has been given to more than half the men patients and nearly half the women, and leave of absence granted very frequently. Although there is no organised system of occupation, 71 per cent. of the patients have been usefully employed. The visiting dentist carried out 390 operations. The amount of sedative drugs given has been greatly reduced during the last two years and there appears to be no doubt that patients are better without them. All the nurses are expected to enter for the State examinations; three of them were successful last year, bringing the total to 50 certificated or registered.

MENTAL DEFECT.

The illustrated report of the LANCASHIRE AND CHESHIRE SOCIETY FOR THE PERMANENT CARE OF THE FEEBLE-MINDED records a happy and uneventful year. There are now 101 women and 36 girls, 140 men and 89 boys in the colony. There was one death—an imbecile woman of 35 from very rapid consumption. The report observes that there is nothing in particular to note about the women except the accidental discovery that they had a great dislike to being more than 30 years old! In consequence a special expedition and extra Christmas presents were provided for inmates over that age. The day school is attended by 81 boys and 36 girls. The health was excellent throughout the year and the only infectious illness was mild epidemics of whooping-cough and chicken-pox, one case of measles, and one of German measles. Two girls suffering from phthisis are isolated in an outdoor hut.

CORRESPONDENCE

PIGMENTATION AND DE-PIGMENTATION.

To the Editor of THE LANCET.

SIR,—In a paper given to the Physical Society in 1919 Prof. R. W. Wood demonstrated the use of some black glass which he had invented, which cut out all but a small part of the ultra-violet radiation from an ordinary mercury lamp. Prof. Wood was kind enough to give me a few samples of this glass, and the appearance of people in this beam of invisible radiation seemed striking enough to warrant further observation. In 1920 Dr. Mottram and I gave a demonstration at the Royal Society of Medicine of some of these peculiarities.

When looking at people in a beam of ultra-violet through this glass the most striking things noticed are the fluorescence of the lens of the eye, the extreme whiteness of the sclerotic, the brilliance of natural teeth and the blackness of false ones, the whiteness of the finger-nails and the peculiar tow-like appearance of hair. The difference in the appearance of the complexion of individuals is very marked. While some show a marked fluorescence of the skin, in others it is completely lacking. The skins which do not fluoresce are apparently those which tan when exposed to the sun. But perhaps the most striking appearance is that of anyone who normally freckles; these show up with extraordinary clearness even in winter, when in ordinary light the individual appears to have lost the freckles completely. They seem to be potential centres of pigmentation, which only need exposure to sunlight for pigment to be deposited in the skin. Generally speaking, I think it may be said that the appearance of children and adults falls into three categories: frecklers, tanners, and those who do neither—people who simply redden in the sun and then peel. Their appearance in the ultra-violet beam is quite distinct from the other two classes.

It occurred to me that it might be interesting to see whether freckling is a characteristic shown by infants, and, by the courtesy of Dr. Boldero, I have had an opportunity recently, in the infant welfare clinic at the Middlesex Hospital, of seeing a number of infants under such conditions that they were illuminated only by these invisible rays. The first group of 14 infants ranged in age from a few months up to a year. Of the 14 attendant mothers seven were good examples of frecklers; but none of the infants showed freckling. On a second occasion, at a clinic of rather older children, a group of 31 children, ranging in age from about 2 to 5 years, were examined. Of the attendant mothers 11 freckled and three of their children showed freckles also; their ages were 4 years 1 month, 4 years 4 months, and 4 years 9 months. Of the other children of the freckling mothers, some showed that they would tan under sunlight exposure, others seemed to be devoid of this potential characteristic.

One other observation on these children seems worth recording, and that is the contrast between the appearance of their eyes and finger-nails and those of the adult. The whites of the eyes in children whom I have looked at in this way do not fluoresce in the brilliantly white manner of adults, and the appearance of the finger-nails, especially in very young infants, is not nearly so striking; in fact they can hardly be distinguished from the soft parts of the hand. In only one child, aged 2½ years, were the nails strongly fluorescent. This was a child upon whom Dr. Boldero asked me to make special observation as its nails were very brittle. It might be worth while to make more observations of this sort to see at what stage tissues of the body develop this power of fluorescence under ultra-violet radiation, and the local or generalised power of laying down pigment in the skin.

It is a common observation that summer tanning has practically faded by the approach of the winter months. It is also probably a common observation that the summer tanning of parts of the skin not ordinarily exposed to light does not fade so quickly as in the exposed parts. One returns from the sea with face and limbs well tanned. In a few months the face and hands have returned to their normal paleness, while the feet and arms from wrist to elbow are still quite brown. The question arises why this should be. May it not be possible that light, in contra-distinction to ultra-violet radiation, has a depigmentary action? There would seem to be a number of facts to support the suggestion.

I am, Sir, yours faithfully,

SIDNEY RUSS.

Barnato Joel Laboratories, Middlesex Hospital, Dec. 1st, 1930.

DENTAL CARIES AND DIET.

To the Editor of THE LANCET.

SIR,—In your issue of Nov. 29th (p. 1194) reference is made to an investigation by Mr. A. Deverall and Miss M. Reynolds into the influence of dietetic measures on the incidence and progress of caries in children's teeth. In this investigation 449 of 882 children, living on much the same diet, were given, one-half of them vitamins A and D, and the other half vitamins D; and "It was found, after four inspections representing one and a half years, that the percentage of teeth developing caries during this period" among the 449 children "was approximately half that in the control groups" who numbered 433. Manifestly the inference we are expected to draw from this investigation is that the administration of certain vitamins helps to check the onset of dental caries. But, Sir, there is no justification for this conclusion, for of the 433 controls (16 of whom, by the way, were given vitamin A) no less than 261 were given treacle—a potent source of dental caries.

This matter of dental caries is of such grave national importance that I feel impelled to add, with the utmost respect, that the Dental Board of the United Kingdom are not likely to further the object they have at heart by countenancing and publishing such unscientifically conceived methods of investigation as this. With the best intentions in the world, those who undertake such careless investigations do positive harm by suggesting that dental caries is due to defective resistance to caries of the tooth enamel (owing to defective composition), whereas it has been proved up to the hilt—and the truth needs to be driven well home—that it is due to the corrosive action of acid (from saccharide fermentation) on the enamel, and that this is no more capable of resisting corrosive acid than a marble slab; an acid with a strong affinity for calcium inevitably seizes upon that element when brought into close proximity to it.

Our duty to the public, then, is not to addle their heads with talk of vitamins (what do the primitive

unspoilt Australian Aborigines who subsist, as we all at one time did, by the hunt and on uncultivated vegetable food—what do they, with their magnificent teeth, know of vitamins?), but to point out that caries only originates in those areas where fermentable saccharide food lodges for protracted periods, such as between the teeth and in the pits of the grinding surfaces of the molars; that it practically never originates on a smooth enamel surface kept clean by the friction of the lips or tongue—e.g., on the lingual surface of the molars or on the labial surface of the incisors at a distance from the gum margin; and that, on account of the greater liability of some teeth to retain saccharide debris than others, some teeth are attacked 20 times more frequently with caries than others, although they are all nourished with the same blood, and all equally supplied with vitamins and other essential nutrients.

These are incontrovertible truths which plainly indicate our duty to the public; they show us how we can achieve immense good. Assuming the average number of carious teeth, past and present, in the jaws of our people to be five—a figure probably well within the mark—this gives a total of 230,000,000, a shocking record for a twentieth century civilised country, the more so when we reflect upon the attendant evils of dental caries, the unsightliness, the bad breath, the root abscesses, the pain, the blood poisoning, the false teeth, to say nothing of the visits to the dentist and the expense. The strange feature of this tragic story is our supineness in dealing with it, and the ready way in which we allow ourselves to be diverted by fanciful side-issues, when the pathology and means of prevention of dental caries have been known for several years. The means of prevention are set forth in Dr. Sim Wallace's handbook, "Teeth and Health," which is approved by the London County Council for use in their schools. The salient features insisted on are: that the dietary shall contain a sufficiency of cleansing foods, and of foods compelling adequate mastication, so that the jaws shall develop properly and the teeth be able to take up their proper positions in the gums; and that the order of the items of a meal shall be such as to minimise the tendency of saccharide food to linger in the retention areas of the teeth.

By a conscientious adoption of the measures set forth in this book it is possible to reduce the occurrence of dental caries almost to the vanishing-point.

I am, Sir, yours faithfully,

HARRY CAMPBELL.

Harley-street, W., Nov. 29th, 1930.

THE CLINICAL TRIAL OF MEDICINAL PRODUCTS.

To the Editor of THE LANCET.

SIR,—The Association of British Chemical Manufacturers has noted with particular interest the opinions in regard to clinical testing which are expressed in a letter by Dr. H. H. Dale appearing in your issue of Nov. 22nd. Attention is drawn particularly to the following paragraph:—

> "It (the case of ergot alkaloids) probably furnishes only a rather striking illustration of a general reluctance of medical men in this country to undertake clinical trials of anything new, under the conditions of scientific control needed to make the results worthy of record."

The satisfactory clinical trial of new medicinal products in this country is regarded as a matter of the greatest importance by this Association, which on various occasions since 1922 has called attention to the impediment to therapeutic progress in this country caused by the lack of published reports relating to new products. Their representations have so far not met with the success which was hoped for, and at present the development of new products for use in medicine is being seriously impeded by the inadequacy of the facilities for proper clinical trials. The result is that this country is being retarded in its efforts as compared with Germany, where a much more effective system is in operation.

The Association feels strongly on this subject, and as the time appears ripe for another effort, it proposes to take the matter up with the various organisations which are interested, in the hope that by coöperative action it may be possible to devise a scheme of clinical testing which will eliminate the handicaps under which medical science is at present labouring.

I am, Sir, yours faithfully,

J. DAVIDSON PRATT,
General Manager, Association of British Chemical Manufacturers.

166, Piccadilly, London, W., Nov. 28th, 1930.

PREVENTION OF SCARLET FEVER IN SCHOOLS

To the Editor of THE LANCET.

SIR,—Dr. Edge's letter in THE LANCET of last week on this subject makes me think that my experience at Uppingham may be of interest. Uppingham School is made up of 13 houses with central classrooms; each house has a population of approximately 50, including boys and domestic staff. Within the last three years scarlet fever has appeared three times (four cases, the disease was recognised early and confirmed by Schultz Charlton test), the patients were removed to sanatorium, the house was isolated and *every* inmate "Dick tested"; positives and doubtfuls were given a prophylactic dose of S.F. Serum (Wellcome). There were no more cases in any of the outbreaks. Two appearances of diphtheria were dealt with after the same manner with equally satisfactory results. Surely M.O.'s of schools have reason to be thankful for "Dick," "Schick," and "Schultz Charlton."

I am, Sir, yours faithfully,

WM. DUNN.

Woodfield House, Uppingham, Nov. 30th, 1930.

To the Editor of THE LANCET.

SIR,—May we be allowed to reply to Dr. D. Edge's courteous comments in your last issue upon our description of an Outbreak of Scarlet Fever at a Preparatory School in THE LANCET of Oct. 11th.

With regard to Dr. Edge's own experience, the fact that 15 cases of scarlet fever occurred in a day school of 250 girls in the autumn term (the usual period of greatest prevalence) and that these were followed by only two cases in the Lent term (the usual period of least prevalence) was not an unusual sequence of events; it might well have happened if no immunisation method had been used. It is significant that the Salford High School was presumably mainly a day school. Surgeon Captain Dudley[1] has shown the complete immunity from both scarlet fever and diphtheria of day boys at the Royal Naval School, Greenwich, when both diseases were prevalent amongst the boarders, an observation which as regards scarlet fever, our own experience at publi

[1] Med. Res. Council, Special Report Series No. 75. The Schick Test. Diphtheria and Scarlet Fever. A Study in Epidemiology. P. 46.

schools confirms. The age distribution of the girls (5 to 17) was probably in the main considerably higher than that of the boys in our investigation, none of whom was over 13; day pupils in the Salford school would probably contain a higher proportion of immunes. It appears also that, when Dr. Edge commenced his work, the outbreak was already nearing the end, whereas we were consulted when the epidemic was reaching its maximum, and, as examination of the cases will show, it was then too late for preventive inoculation to be effective promptly.

For the above reasons we consider that Dr. Edge's outbreak and ours are in no way comparable. Whilst we agree that to diminish the number of susceptibles and increase the number of immunes has a most important effect upon the herd immunity of the school, we feel that the success which crowned Dr. Edge's labours and upon which we congratulate him, was due in part to good fortune, and that similar success would not have been attained had we adopted the same method.

Further experience with immunisation against scarlet fever in schools or other institutions is very desirable. In estimating the results obtained by this method one must always bear in mind the special circumstances dealt with, in particular, the type of school or other institution (day attendance or residence), the stage of the outbreak when intervention was initiated, and the virulence of the infection.

We, are, Sir, yours faithfully,

J. A. GLOVER.
F. GRIFFITH.

Dec. 2nd, 1930.

TWINNING IN MONGOLISM.

To the Editor of THE LANCET.

SIR,—I should be much obliged if any correspondent who has statistics available will kindly tell me how many instances are known of twinning in mongolism, one of the children being a normal child and the other of mongol type. In the course of 33 years' work on mental deficiency I have only come across the occurrence twice, the second case having come to my personal attention this week.

I am, Sir, yours faithfully,

W. H. COUPLAND,
Medical Superintendent, Royal Albert Institution for the Feeble-minded of the Northern Counties.

Lancaster, Nov. 26th, 1930.

THE CHARTERHOUSE RHEUMATISM CLINIC.

To the Editor of THE LANCET.

SIR,—With reference to Dr. Congdon's suggestion that the Charterhouse clinic team should confine its researches to one definite entity—namely, acute rheumatoid arthritis—I think that to do so would be a mistake. At the rheumatism clinic held at the public health offices, Brighton, and run on the same lines as the Charterhouse clinic, we find it very difficult to draw any definite line between the various types of rheumatism. In the present state of our knowledge, we doubt if such a definition serves any useful purpose, other than one of convenience, but rather that it confuses the issue still more. We doubt if any case of rheumatoid arthritis remains free for any length of time from either osteo-arthritis, fibrositis or neuritis. The work at the Brighton clinic is carried out on the supposition that the streptococcus and the staphylococcus play a large part in the causation of rheumatism, and that it is of considerable importance to realise that rheumatism is not a disease of particular type of tissue, but that it is essentially a disease of the whole body.

Dr. Congdon's use of a streptococcal vaccine for the treatment of rheumatoid arthritis is interesting, in that we find the majority of such cases are more sensitive to a vaccine prepared from Dr. Warren-Crowe's two types of staphylococci (Micrococcus D. & E.). This discrepancy is possibly explicable on the supposition that, if the resistance of the patient is such that he can become infected by the rheumatism-producing streptococcus, he is likely to become infected by the staphylococcus, both these types of organism being potential serophytes.

I am, Sir, yours faithfully,

F. E. GRAHAM-BONNALIE, M.B., B.Chir. Camb.

Hove, Sussex, Dec. 1st, 1930.

MINOR DIGESTIVE DISORDERS.

To the Editor of THE LANCET.

SIR,—Having read with interest Dr. Hunt's refreshing lecture in your issue of Nov. 8th, I am led to wonder what is to be gained by substituting the term "abdominal migraine" for bilious attacks unaccompanied by headache. For some years it has been the fashion to call these attacks "acidosis," which no doubt often accompanies them, but as both the headache and the acidosis are due to an unknown digestive cause, would it not be better to retain the old name "bilious attack" until our knowledge has advanced further, rather than by a new name to appear to lay claim to a knowledge that we do not really possess. Moreover, the adjective "bilious" is justified, for such attacks are frequently prevented or alleviated by the administration of calomel, or a similar drug leading to the passage of highly bile-stained motions.

I am, Sir, yours faithfully,

Paignton, Nov. 28th, 1930. ERNEST WARD.

VALUE OF RAMISECTION IN CASES OF SPASTIC WEAKNESS.

To the Editor of THE LANCET.

SIR,—In reply to Mr. Royle's letter in your last issue, may we have leave to state that the investigation reported in our note of July 19th was undertaken with the express purpose of meeting Mr. Royle's criticism that in cases adversely reported upon by others the operation had been incorrectly performed. The cases reported by us were selected by Mr. Royle, from a number which he examined, as likely to benefit from the operation. If, as he asserts, he chose the worst patients, it was presumably for some reason which we fail to appreciate.

As stated in our paper, the notes of our cases provided a mass of material so large that they were deemed inappropriate for publication in extenso. In reply to the points which Mr. Royle raises, we feel called upon to quote in more detail the notes of some of our patients.

Case 1.—Mr. Royle does not contest our observation that the patient was unimproved by the operation. He complains that no mention is made in our report of athetosis in this case. We have before us two neurological reports upon this patient, one by Dr. Fulton, who took part in the earlier stage of the investigations, the other by Dr. Symonds. Both observed tremor of a clonic type on attempted voluntary movement. Athetosis in our opinion was not present.

Case 2.—The selection from the notes of this case of an isolated observation recorded by one of the assistant medical officers on Feb. 25th, 1928, can be considered fortunate only as an example of Mr. Royle's singleness of vision. We print in full the pre-operative note on stance and walking, the notes of post-operative progress, and the final note on stance and walking :—

Before operation : (Note by Dr. Fulton.) "She stands unsupported some two or three seconds and then sinks backwards—sometimes with an attempt to restore balance by taking one or two steps back and usually without doing so. Supported gently by the hands (outstretched in front) she can walk slowly forwards. Turning is by a series of small turning steps, and usually ends in collapse backwards. The feet are cherry red and tend to be cold."

On June 22nd, 1927, Mr. Royle performed right lumbar ramisection ; 23rd, less spasm ; 24th, no increase in voluntary power ; July 1st, vaso-dilatation still persists ; right leg very stiff ; no definite improvement ; 12th, Mr Royle performed left lumbar ramisection and elongated both tendo Achillis ; Oct. 18th, position of feet satisfactory ; feet and hands cold and blue ; Dec. 31st, feet in good position ; walking not improved ; Jan. 25th, 1928, walks a little slowly ; Feb. 25th, feet satisfactory. *Can walk comfortably sometimes.* July 26th, discharged at request of parents ; no improvement since admission.

She was admitted into Guy's Hospital in May, 1929, under Dr. Symonds, who made the following note : "Cannot stand unsupported. Supported on both sides can walk dragging right foot along ground."

It will be seen that, taken in its context, the phrase (in italics) quoted by Mr. Royle conveys a very different impression from that given in his letter.

Case 3.—We have nothing to add to the opinion already expressed that the post-operative improvement was no more than might reasonably be attributed to spontaneous recovery from an acute hemiplegia.

Case 4.—Mr. Royle complained that immediate post-operative improvement noted by him is not mentioned in our report. The immediate post-operative record reads as follows : "Mr. Royle performed right lumbar ramisectomy on May 10th, 1927, and left lumbar ramisectomy on June 22nd, 1927. He saw the patient ten hours after operation and noted improvement. A note by the assistant medical officer states that there was temporary improvement." The purpose of our investigation was to discover our own views upon the results of the operation. Mr. Royle's opinions were already well known to us.

Case 5.—In this case Mr. Royle states : "The important point is that the patient was unable to walk before operation and walked unaided three weeks after ramisection." In the preceding sentence he has quoted Mr. Trethowan's observation that before the operation the patient was "able to walk with a little help." The first half, then, of Mr. Royle's statement is on his own showing inaccurate. As to the second half, our notes show that Mr. Royle performed left lumbar ramisection on May 10th, 1927. On June 21st, the note is "walks only with assistance." On June 23rd Mr. Royle performed right lumbar ramisection. The next note on walking is Feb. 7th, 1928. Mr. Trethowan noted "walks with assistance with high-stepping gait. Both tendo Achillis should be lengthened." On March 5th, 1928, this operation was performed. Subsequent notes read : "July 17th, 1928, not walking. August 2nd, gets along quite well with a chair ; gets heels to the ground. Sept. 11th, can walk a few steps by himself." From this time onward there is occasional note of improvement until on March 6th, 1929, the note is "walking with sticks." It appears from these notes that Mr. Royle's statement that the boy could walk unaided three weeks after ramisection is entirely unsupported by the facts, and that no improvement was observed until after the bilateral lengthening of the tendo Achillis performed by Mr. Trethowan nine months after Mr. Royle's final operation.

Case 6.—Mr. Royle states that this patient improved "even with regard to opening her hand." Our records, on the contrary, state under Jan. 21st, 1929, "the fingers cannot be moved voluntarily," and on March 17th, "the right arm is weak and spastic with fair power of movement in shoulder and elbow, very little in wrist, none in fingers." Our opinion, as already recorded, is that when examined on the latter date, the patient showed no improvement upon her pre-operative condition.

In reply to the concluding paragraphs of Mr. Royle's letter, we should like once more to emphasise that the purpose of our investigation was to record the results of ramisection as observed by ourselves, rather than by Mr. Royle or the patients, and we believe that the "honest seeker after truth" to whom he appeals may learn more from the report of six cases critically observed and recorded than from six hundred reviewed in the manner and spirit of Mr. Royle.

We are, Sir, yours faithfully,

C. P. SYMONDS, H. A. T. FAIRBANK,
A. S. BLUNDELL BANKART, G. PERKINS,
W. R. BRISTOW, W. GORDON PUGH,
R. C. ELMSLIE, W. H. TRETHOWAN,
E. LAMING EVANS, P. JENNER VERRALL.

Dec. 3rd, 1930.

DIAGNOSIS OF PULMONARY TUBERCLE.

To the Editor of THE LANCET.

SIR,—I venture to make two comments on Dr. Burrell's instructive lecture. First, I think that he undervalues physical signs, especially as he makes a very brief reference to a most valuable sign, the existence of a difference in expansion of the two sides. If a difference in expansion is found on comparing the two sides, it is commonly the first sign discoverable ; and if the patient's history and symptoms suggest pulmonary tuberculosis, the indication for strict treatment is very definite. The different parts of the chest, back and front, as well as the costal margin and upper abdomen must be compared. In my experience it is seldom that there is no difference in a case of early pulmonary tuberculosis.

Next, Dr. Burrell speaks of "idiopathic" pleurisy being due to pulmonary tuberculosis. Much more frequently is it due to activity of glandular tuberculosis. It is true that the gland is originally infected from the lung, but the pulmonary focus may be quiet ; whereas the glandular infection may be active and produce an inflammatory reaction in the pleura.

I am, Sir, yours faithfully,

CHARLES MILLER.

Harrowby Court, W., Nov. 27th, 1930.

DEATH CERTIFICATION IN CORONERS' CASES

To the Editor of THE LANCET.

SIR,—My attention has been drawn to an article by Mr. J. P. Hedley in your issue of Sept. 20th last concluding with a statement that in the event of a practitioner feeling it his duty to report a death due to an abortion to the coroner "he should on no account sign the death certificate." As this instruction is contrary to the view which it has long been my duty to establish, will you kindly permit me to refer Mr. Hedley, and those of your readers who might otherwise have been disposed to take his advice to the following paragraphs on page iii. in the book o

Medical Certificates of Cause of Death in their respective possession :—

"Some doubts have existed as to the duty of practitioners to give certificates of cause of death in a case where an inquest may possibly take place. It is desired to point out that, as the law now stands, the duty placed upon a registered medical practitioner who was in attendance upon a deceased person in his or her last illness to give a medical certificate of the cause of death to the best of his knowledge and belief, appears to be unqualified, and unaffected by the fact that he or some other person has reported the case to the coroner or that an inquest may take place.

"The practice of refraining from giving a medical certificate of cause of death when the case is being reported to the coroner was to some extent strengthened by the fear that, if a medical certificate is given, the death may forthwith be registered and the body buried before an inquest can take place. Statement A on the back of the certificate has accordingly been included to obviate any such risk. If the practitioner when giving a certificate is also reporting the case to the coroner and accordingly initials Statement A on the back of the certificate, it will be the duty of the registrar to suspend the registration of the death until he learns from the coroner whether an inquest is or is not to be held."

I am, Sir, yours faithfully,

S. P. VIVIAN,
Registrar-General.

General Register Office, Somerset House, London, W.C.2.
Dec. 3rd, 1930.

PANEL PRACTICE

Relative Sickness of Men and Women.

Sir Alfred Watson, the Government Actuary in an address to the Institute of Actuaries, on Nov. 24th, reverted to the increase in sickness claims under the National Health Insurance Act since 1921, and touched on the difficult question of the sickness rate of women. If, he said, the popular generalisation that women are subject to more sickness than men means that out of an equal number of each sex the cases of incapacity in the course of a year will be more numerous among the women than among the men, such a generalisation is fallacious so far as unmarried women are concerned. Practically the whole of the excess in the women's rate is attributable to the difference in the duration of claims. Since the unmarried woman is apparently not subject to a greater risk of becoming incapacitated for work than a man of corresponding age, it is difficult, he added, to understand why, when sickness comes, the woman's average period of incapacity should be nearly half as long again as that of a man. He went on to suggest that the reason is not physical but economic. The majority of the insured men have wives and dependent families ; the majority of the unmarried insured women have no corresponding responsibilities. Apart from the immediate considerations which this difference of conditions creates, it is probable, on the whole, that the average man in industrial employment runs more risk than an insured women does of the loss of his job if he has to be long absent from work. The high rate of unemployment in many industries in which men only are employed, from which results the fact that the general rate of unemployment among men is normally about twice as high as it is among women, suggests that this may be a potent element in the case. Sir Alfred left it open whether it is to be inferred that many men return to work after sickness before they are fit for it, or whether a substantial proportion of women are apt to protract unduly their period of convalescence.

Uninsurables.

The National Medical Service Association, in a pamphlet commenting on the B.M.A. proposals for a general medical service, has pointed out one difficulty of any kind of contributory scheme. For it would exclude from its benefits a section of the population which stands in great need of medical attention. Four million persons, it is pointed out, including such types as hawkers, costermongers, cobblers, village blacksmiths, gypsies, tinkers, small shop-keepers and agricultural small-holders, whose economic position is often far inferior to that of many insured persons, have no part or lot in the present National Health Insurance, and can only be admitted by an amendment of the law bringing them in as "voluntary" contributors. Administrative difficulties in the way of securing the regular collection of contributions make illusory any hope of including the majority of these people. Contributions can be collected easily enough from the ordinary workman because the employer is obliged to deduct his share when paying wages, but such circumstances do not exist in the case, for example, of costermongers and other small entrepreneurs who have no employer and whose earnings depend entirely on their own exertions. A hawker may quite easily make £5 or £6 in one week, and only a few shillings for several succeeding weeks. He will neither attend at the Post Office each week to have his card stamped, nor commonly will he be in the position to pay a lump sum at the end of a quarter or half year. In addition, his contribution must be heavier because it must include not only his own, but the employers' share.

The N.M.S.A. is inclined to make use of the B.M.A. proposals, in spite of its deficiencies, as a step in the development of a national medical service. The importance of bringing an increasing number of the practitioners of the country into close contact with each other and with the existing public medical services cannot be over-estimated, and the scheme is regarded as shaping in this direction.

A GENEROUS GIFT TO DISTRICT NURSES.—An anonymous donor has given £100,000 as the nucleus of a fund to provide pensions for district nurses. It will be called "The 1930 Fund for Trained District Nurses." A committee to administer the fund has been formed, consisting of Sir Campbell Rhodes (Chairman), Sir William Foot Mitchell (Treasurer), Dame Maud McCarthy, Miss Musson, Miss Finch, Miss Darbyshire, Miss Cox-Davies, Miss Cockrell, Sir William Sheppard, and Mr. Arnold Herbert, K.C.

PAYMENT FOR HOSPITAL TREATMENT.—The governors of the Horton General Hospital, Banbury, have recently decided that patients with incomes not exceeding £350 a year shall pay a maintenance fee of 5s. per week, save in special circumstances when treatment will be free. Patients are admitted by a printed recommendation signed by a governor, or by a card issued by the Workpeople's Association. Accident and acute cases are admitted without formalities, and necessitous cases will be treated without payment.

ECCLES AND PATRICROFT HOSPITAL, LIMITED.—This institution has been registered as a company limited by guarantee, without share capital, with 600 members, each liable for £1 in the event of winding up. The following explanation of this step has been officially given : To recover, under the Health Insurance Act, expenses incurred in providing drugs, food, and bandages to panel patients, a hospital must be appointed panel chemists. But an unincorporated hospital is not qualified for such an appointment. When a hospital becomes a limited company it may open a dispensary and have a qualified chemist in charge, by which means it complies with the Pharmacy Acts. Then it receives the panel doctors' certificates and, having supplied the necessaries prescribed, its expenses in the matter become recoverable from health insurance funds.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

Buildings (Escape from Fire) Bill.

IN the House of Commons on Wednesday, Nov. 26th, Mr. GRAHAM WHITE asked leave to introduce a Bill to make further and better provision with respect to means of escape from buildings in case of fire. He said that the first clause provided that in the case of every new building which was more than two storeys in height or where the upper storey of any one floor was more than 22 feet from the ground there should be provided such means of escape for the persons employed therein, sleeping therein, or resorting thereto as might be considered reasonable in all the circumstances of the cases. The buildings to which these conditions should apply were tenement buildings, flats, maisonettes or buildings which were to be used as hotels, boarding houses, boarding schools, nursing homes, and the like. It was suggested that no such building should be occupied until a certificate had been given by the local authority that adequate means had been provided and that they existed in working order. The second clause provided in regard to existing buildings that if in the opinion of the local authority such building was not already provided with adequate means of escape in the case of fire they might call on the owner, by notice served in writing, to make such provision as might be considered reasonable in all the circumstances of the case, and the owner should then take the necessary steps to make provision. The third clause provided that similar conditions should apply in the case of buildings which were being converted for any of the uses described. The Bill also gave powers to local authorities to require owners to provide certain forms of mechanical sprinklers and mechanical apparatus for the extinction of fire. Anyone who was aggrieved by any provision of the Bill would have the right of appeal to a court of summary jurisdiction.

Leave was given to introduce the Bill, which was brought in and read a first time.

HOUSE OF COMMONS.

WEDNESDAY, NOV. 26TH.

Detention of Dr. Dey.

Mr. MALONE asked the Secretary for Foreign Affairs whether he had any information concerning the detention of Dr. William Dey, a British-Canadian subject, on Oct. 21st, 1930, by the Polish authorities at Lemberg; what was the reason for the detention; and whether he was aware that Dr. Dey was refused permission to communicate with the British consul, Mr. Taylor.—Mr. HENDERSON replied: Yes, Sir. The circumstances of this case have been reported to me, and I have instructed H.M.'s Ambassador at Warsaw to make appropriate representations to the Polish Government.

Physical Fitness of Motor Drivers.

Mr. D. G. SOMERVILLE asked the Minister of Transport whether he was aware that during the past few weeks there had been an unusual demand for and distribution of motor driving licences available during 1931 as a result of the desire of many people to avoid the obligation of filling in the new licensing forms; and whether, with a view to reducing as far as possible the number of physically unfit drivers on the road before the speed limit was removed, he would take steps to obtain a declaration of physical fitness from all those who had obtained driving licences since Oct. 1st this year.—Mr. H. MORRISON replied: I am not aware that there has recently been any unusual demand for motor driver's licences. I have no power to call for a declaration of physical fitness from persons who have obtained driver's licences under the Motor Car Act, 1903.

Committee on Rural Housing.

Colonel BURTON asked the Minister of Agriculture whether he was now in a position to state the names of the committee he was appointing to inquire into the conditions of rural housing.—Dr. ADDISON replied: The members of the committee recently appointed by my right hon. friend the Minister of Health and myself, to inquire into the conditions of occupation of agricultural cottages, are as follows: Mr. W. R. Smith, Parliamentary Secretary to the Board of Trade (chairman); Mr. D. Black; Mr. G. Dallas, M.P.; Mr. H. H. George; Viscount Lymington, M.P.; Mr. J. C. McGrath; Miss E. Picton-Turbervill, M.P.

Hospital Sweepstakes.

Sir NICHOLAS GRATTAN-DOYLE asked the Prime Minister whether, seeing the success attending the Irish lottery on behalf of the Dublin hospitals, he would give facilities for the passing of legislation to legalise in this country the holding of sweepstakes or lotteries in aid of London hospitals or for kindred purposes.—Mr. MACDONALD (Prime Minister) replied: I can hold out no prospect of time being found for the discussion of this subject.

Sir N. GRATTAN-DOYLE: Is it not a fact that our laws concerning lotteries and sweepstakes are the laughing stock of the world?

Mr. MACDONALD: That question had better be addressed to the Home Office.

Mr. FOOT: Can the Prime Minister now give his attention to the request that has been made for the setting up of a select committee to deal with the whole matter of the existing gambling laws of the country?

Mr. MACDONALD: I am sorry I have not that in mind. If the hon. Member will put a question down I will give attention to the point.

THURSDAY, NOV. 27TH.

Mr. HANNON asked the Home Secretary if he proposed to introduce legislation to bring the law in this country into harmony with the law of the Irish Free State relating to hospital sweepstakes, so that British hospitals, which were in need of financial help, might benefit by the results.

Sir NICHOLAS GRATTAN-DOYLE asked the Home Secretary a similar question.—Mr. CLYNES replied: There has been no departure from the policy which has always been followed in the case of sweepstakes promoted outside this country. I am, however, fully aware that the circumstances connected with the recent sweepstake promoted in the Irish Free State call for serious and careful consideration from several points of view, but I am not at present in a position to make any statement as to the action which it may be desirable to take in the matter.

Maternity Cases in Prisons.

Viscountess ASTOR asked the Home Secretary how many babies had been born in prison in England and Wales during the 12 months ended July 31st, 1930; how many pregnant women prisoners had been transferred to outside hospitals or maternity homes for childbirth; whether any special diet was allowed to pregnant women in prison; and, if so, what was the nature of such diet.—Mr. CLYNES replied: During the 12 months ended July 31st last there were 14 births in prisons in England and Wales, and two in the Borstal Institution at Aylesbury. Special arrangements as regards diet are made in each case in accordance with the orders of the medical officer. No woman was transferred to a hospital or maternity home for childbirth and subsequently brought back to prison, but seven women were discharged from prison on that ground.

Industrial Diseases.

Mr. BROTHERS asked the Home Secretary if he would refer to the Departmental Committee appointed to inquire and report on proposals for extending or modifying the schedule of industrial diseases, under the Workmen's Compensation Act, the excess of respiratory illness amongst male cardroom workers in cotton mills.—Mr. CLYNES replied: Inquiries made by the Industrial Health Research Board at the request of the Home Office Departmental Committee on Dust in Card Rooms have established that there is a high incidence of sickness due to respiratory complaints amongst cardroom workers above a certain age, but I do not gather that there is any evidence to show that these complaints are distinguishable from the ordinary forms of respiratory disease. The Departmental Committee are, however, investigating the precise nature and cause of the sickness, and I will consider my hon. friend's suggestion when their report is received.

Inspection of Children's Homes.

Mr. SHEPHERD asked the Home Secretary the number of voluntary homes or institutions containing children and young persons not open to inspection; and the total population of such places.—Mr. CLYNES replied: I regret that I am unable to give the information asked for by my hon. friend. The Child Adoption Committee in its third and

final report, issued in 1926, drew attention to the fact that this information was not available, and recommended amendments of the Children Act which will be incorporated in the Children Bill now being prepared.

Mental Defectives.

Lieut.-Colonel FREMANTLE asked the Minister of Health whether the number of mentally deficient persons in this country had increased in recent years; if so, to what extent; and what was his present estimate of their number. —Mr. GREENWOOD replied: During the last five years the total number of mental defectives ascertained by local authorities under the Mental Deficiency Act has increased from 48,778 to 71,439—i.e., from 1·29 to 1·81 per 1000 of the total population of England and Wales. The ascertainment is not complete, and results vary in different areas. In these circumstances it is impossible to say whether the number of defectives is increasing in proportion to the total population, or to frame a conclusive estimate of the present number, but in certain areas the ascertainment by local authorities has reached 5 per 1000.

Voluntary Contributors to National Insurance.

Mr. THOMAS LEWIS asked the Minister of Health the number of persons who had become voluntary contributors under the National Health Insurance Act by virtue of the provisions of Section 21 of the Widows', Orphans' and Old Age Contributory Pensions Act, 1929.—Mr. GREENWOOD replied: The exact number is not available, but it appears from information supplied by the approved societies chiefly concerned that it is in the neighbourhood of 60,000.

Insured Persons and Continued Benefit.

Mr. THOMAS LEWIS asked the Minister of Health what action, if any, it was proposed to take relative to persons whose insurance under the National Health Insurance Acts would normally cease at the end of the present year.—Mr. GREENWOOD replied: I have summoned a meeting of the Approved Societies Consultative Council for Wednesday next to consider the matter, and after consultation with them I hope to be in a position to make a statement.

Inspection of Voluntary Maternity Homes.

Dr. BENTHAM asked the Minister of Health if all the voluntary maternity homes in receipt of a grant, paid previously by the Ministry of Health and now through local authorities, were still visited by the medical inspectors of the Ministry of Health.—Mr. GREENWOOD replied: The routine inspection of voluntary maternity homes is carried out by the responsible local authorities. The arrangements made for the training of midwives in maternity homes which are in receipt of grants from my department for that purpose are inspected periodically by a medical officer of my department, and I have retained the right to instruct my officers to visit any maternity home as occasion arises.

Red Cross Clinic for Rheumatism.

Mr. GRAHAM WHITE asked the Minister of Health if he had any information as to the progress of the work of the clinic for the treatment of rheumatism established by the British Red Cross Society; and if he was taking any steps to encourage the establishment of similar institutions in other localities.—Mr. GREENWOOD replied: I understand that this clinic is making satisfactory progress. I am always prepared to consider any schemes put forward by local authorities or otherwise for the treatment of rheumatism.

Statistics of Casuals and Lunatics.

Mr. SHEPHERD asked the Minister of Health why the monthly issue of statistics showing the numbers of casuals and lunatics had ceased.—Mr. GREENWOOD replied: My hon. friend is under some misapprehension. There has been no change in regard to the issue of these statistics. Figures for casuals have been issued in quarterly statements since 1919, and this practice is being continued. The number of lunatics on any day other than Jan. 1st has not been ascertained for many years. Patients in mental hospitals are no longer deemed to be in receipt of poor relief, and the numbers of such persons will not appear in future issues of the quarterly statement.

Deaths from Small-pox.

Mr. GROVES asked the Minister of Health whether any deaths occurred amongst the small-pox cases quoted in columns A, B, C, and D of the report of the chief medical officer; and, if so, what was the number, also the ages, in each class respectively.—Mr. GREENWOOD replied: 13 deaths occurred among the small-pox cases tabulated on p. 70 of the report of the chief medical officer of my department for the year 1929. These deaths, following the classification adopted in the tabular statement, were distributed as follows: Col. A (successfully vaccinated), 3 deaths of persons aged 14, 34, and 42 years respectively; Col. B (successfully revaccinated), no deaths; Col. C (unvaccinated), 9 deaths of persons aged 3 days, 3 weeks, 1 month, 8 months, 2, 9, 13, 37, and 63 years respectively; Col. D (vaccinal condition doubtful), 1 death of a person aged 74 years.

Royal Veterinary College.

Major CARVER asked the Minister of Agriculture what institutions for the promotion of veterinary science existed in the United Kingdom other than the Royal Veterinary College; whether his attention had been called to the danger that the College might have to close down for want of financial support; and whether, to avert this, he was able to offer more help than he had hitherto promised.—Dr. ADDISON replied: Besides the Royal Veterinary College, the following institutions in Great Britain provide veterinary education: Liverpool University; the Royal (Dick) Veterinary College, Edinburgh; and the Glasgow Veterinary College. In addition, the University Department of Animal Pathology at Cambridge, the Ministry of Agriculture's Veterinary Laboratory at Weybridge, and the Station of the Scottish Animal Diseases Research Association, near Edinburgh, exist for the purpose of research in animal diseases. I am fully acquainted with the financial position of the Royal Veterinary College. As the hon. and gallant Member is no doubt aware, the Government have offered to the College on certain conditions a grant of £150,000 towards a scheme of reconstruction costing £250,000, and are further prepared to contemplate an increase of the present maintenance grant when the reconstruction is completed. I sincerely trust that, with the help which the College may be able to obtain from other sources, these grants will be sufficient to avert the closing down of the College, an event which I should deeply deplore.

MONDAY, DEC. 1ST.

Insured Persons and Change of Panel Doctor.

Mr. RHYS DAVIES asked the Minister of Health whether he had now concluded his negotiations with doctors in panel practice and the approved societies for a variation of the period during which an insured person might change his panel doctor; and, if so, what arrangements had been arrived at.—Mr. GREENWOOD replied: On the question of principle, I have come to the conclusion that I ought to modify the relevant part of the Medical Benefit Regulations so as to require a longer period to elapse before effect is given to a notice by an insured person of his desire to transfer to another insurance doctor. Details of the procedure will be discussed with the representative bodies concerned as soon as possble.

Poison Gas Experiments.

Mr. FREEMAN asked the Secretary for War what were the positive tests of demonstrating the comparative effects of poison gases on human beings and living animals at present being pursued at the chemical warfare research departments. —Mr. T. SHAW replied: Examination of human beings who were gassed during the war and of animals subjected to experiment has shown essential similarities. From this it is deduced that protective and curative measures found effective in the case of animals will be applicable in the case of human beings. Tests, within the limits necessary to ensure that the volunteers come to no harm, are being carried out on the lines referred to in my answer of Nov. 25th. For example, contaminated materials, which have been treated for the purpose of cleansing the material from contamination, are brought into contact first with animals and then with human beings.

Leprosy in India.

Major GRAHAM POLE asked the Secretary for India, in regard to the measures being taken in India to avert the spread of leprosy, if he would give information showing in which provinces leprosy survey parties had been set up and village clinics opened with the support of the Government.—Mr. WEDGWOOD BENN replied: Leprosy surveys have been carried out in Bihar and Orissa, the Central Provinces, Madras, and in parts of Bengal, and leprosy clinics have been established by the local authorities in the areas covered by these surveys. In addition, numerous clinics have been opened in other parts of India by doctors trained in leprosy treatment during the last few years.

TUESDAY, DEC. 2ND.

Accidents to Boys in Mines.

Mr. FREEMAN asked the Secretary for Mines whether, in view of the fact that one-fourth of the boys under 16 years employed in mines were killed and injured in 1929, he would consider the suggestions put forward in the Northern Mines' Report for 1927 dealing with haulage accidents to boys under

16; whether he could offer any explanation of the high rate of fatal and non-fatal accidents to such boys from falls of ground in the South Wales coalfield; and whether he would consider adopting the example of Germany, mentioned in the 1927 Northern Mines' Report, in regard to the prohibition of boys under 16 from working underground, and the systematic training till that age on the surface, and over that age, till they were 18, below ground.—Mr. E. SHINWELL replied: The suggestions contained in the Report of H.M. Divisional Inspector of Mines for the Northern Division for 1927 relating to accidents to boys are engaging my serious attention, and while I cannot hold out any prospect of legislation under the present conditions of the mining industry, I shall do everything I can to bring to the notice of the industry the necessity for special measures to deal with the problem. With regard to the second part of the question, the high rate of accidents from falls of ground to boys in South Wales is due to the long-established custom in that district whereby boys start work at the coal face as colliers' helpers. Their initial employment on haulage work, as in other districts, is not practicable owing to the size of the horses and trams in use.

Physical Tests for Army Recruits.

Mr. LOUIS SMITH asked the Secretary for War what was the present shortage in the regular forces as a result of unsatisfactory recruiting returns; how many men had offered their services in each of the past 12 months; and how many had been rejected as physically unfit.—Mr. T. SHAW replied: The net shortage of warrant officers, non-commissioned officers, and men in the Regular Army, including the British Army in India, on Nov. 1st was approximately 8700. As regards the second and third parts of the question, records are not avaiable at the War Office to show the number of recruits rejected month by month on medical and physical grounds, but the total number of persons served with notice papers during the recruiting year ended Sept. 30th last, was 66,717, of whom 26,550 were finally approved; 35,425 were rejected on medical or physical grounds.

Mental Condition of Scottish Offenders.

Mr. STEPHEN asked the Secretary for Scotland the number of persons deprived of their liberty, through being incapable of pleading when charged with an offence, who had been certified sane for one year, two years, and three or more years, respectively.—Mr. ADAMSON replied: On Nov. 17th, 1930, there were ten inmates of the Criminal Lunatic Department who had been reported by the medical superintendent as being of sound mind for three years or more, one as being of sound mind for two years, and one as being of sound mind for one year. Of these 12 inmates, three were continuously detained in the institution during the respective periods in question, and nine had been at liberty under conditions during part of these periods.

Medical Examination of Pensioners.

Major CARVER asked the Minister of Pensions how many permanent awards had been made in the last year, and how many men were being re-boarded for medical examination; and whether he would consider the desirability of now making all awards permanent.—Mr. ROBERTS replied: During the 12 months ending September last, some 26,300 final awards were made. The number of officers and men medically re-examined at the instance of the Ministry has been greatly reduced, and at the present time is on an average not more than about 300 a week. I have full sympathy with the hon. and gallant Member's desire that medical examination should be reduced to the minimum possible. While there would be no power, nor would it be in the best interests of pensioners, to make final awards in all cases without regard to whether they were suitable or not, it is the policy of the department to give prolonged awards wherever justifiable.

MEDICAL NEWS

University of Oxford.

On Nov. 22nd the following degrees were conferred:—

D.M.—T. C. Hunt and O. R. Tisdall.
B.M.—J. N. O'Reilly.

University of Dublin.

At recent examinations in the School of Physic, Trinity College, the following candidates were successful:—

FINAL EXAMINATION FOR M.B., B.CH., AND B.A.O.

Medicine.—G. F. Ennis, D. J. O'Ryan, William Caldwell, T. H. Dockrell, C. H. Adderley, H. H. G. Dorman, Daniel Nolan, Charles Bowesman, C. M. Elliott, A. J. O'Connor, Kathleen A. Wilson, and Charles Ryan.

Surgery.—G. F. Ennis, D. J. O'Ryan, W. A. Robinson, E. S. Duthie, H. H. G. Dorman, N. A. Kinnear, William Caldwell, J. B. Scott, F. P. FitzGerald, D. G. Kennedy, and H. S. North.

Midwifery.—*Elizabeth K. Roberts, *Margaret D. Gregg, *Marjorie L. Campbell, *H. F. G. Irwin, I. G. L. Ford, J. C. M. Brambell, H. V. Tighe, W. A. Hill, J. G. Wilson, T. F. O'Donnell, E. S. Samuels, T. M. R. Ahern, M. G. Leane, T. J. O'Sullivan, F. C. Jackson, N. H. Leask, R. C. Sutton, Edward Morrison, J. A. Page, and D. H. S. Boyd.

* Passed on high marks.

University of London.

In the recent examination for the Diploma in Psychological Medicine Dr. J. W. M. Alexander was the successful candidate (with special knowledge of psychiatry).

The Paul Philip Reitlinger prize, of the value of £30, offered this year for the best essay embodying the result of research on a medical subject, has been awarded to Joseph Adler, a student of King's College and Charing Cross Hospital Medical School, for an essay on The Action of Histamine on Gastric Secretion after Partial Gastrectomy.

Fellowship of Medicine and Post-Graduate Medical Association.

On Monday, Dec. 8th, at 4.0 P.M., at 11 Chandos-street, London, W., Dr. Philip Figdor will lecture on Recent Advances in Osteo-Arthritis. Special free demonstrations will be given during the week as follows: at 2 P.M. on Monday, Dec. 8th., at the Children's Clinic, by Dr. Bernard Myers on Modern Methods of Infant Feeding; at 2 P.M. on Tuesday, the 9th, at the Royal Northern Hospital, by Mr. Kenneth Walker on Urological Cases; at 2 P.M. on Thursday, the 11th, at the Metropolitan Hospital, by Dr. P. Hamill in the out-patient department. The list of special courses for 1931 is now published, and copies may be had from the Secretary of the Fellowship at 1, Wimpole-street, London, W. 1.

University of Aberdeen.

On Nov. 25th the Diploma in Public Health was conferred on Dr. Margaret F. Fraser.

Pharmaceutical Society of Great Britain.

At a meeting to be held at the Society's House, 17, Bloomsbury-square, London, W.C., at 8.30 P.M., on Tuesday, Dec. 9th, Prof. D. M. S. Watson, F.R.S., will lecture on Endocrine Organs.

North Staffordshire Orthopædic Hospital.

Lord Ednam last week laid the foundation-stone of extensions to the orthopædic hospital of the North Staffordshire Cripples Aid Society at Hartshall, Stoke-on-Trent. The new buildings, which will cost £20,000, are to be a memorial to Lady Ednam, the former president of the society, who was killed a few months ago in an aeroplane accident.

British College of Nurses.

Princess Arthur of Connaught, S.R.N., presided at this college, on Nov. 26th, at a lecture by Miss Isabel Macdonald on Nursing History. After referring to the traces of nursing history in the ancient civilisations of India, Persia, Chaldea, Egypt, Greece, and Rome, Miss Macdonald showed a series of lantern slides illustrating the work of the Church and of various saints who had made it a part of their mission to care for the sick. These included the Empress Helena, who, with her son Constantine (A.D. 272–337), built shelters for strangers and pilgrims; Matilda, consort of King Stephen, who founded the hospital of St. Catherine by the Tower, Queen Eleanor, first consort of Edward I., and Queen Philippa of Hainault, consort of Edward III., who were also connected with this hospital, of which the Queen's Institute of District Nursing was the modern exposition. Their record inspired Miss Macdonald to search the annals of Scottish history to find a royal Scottish nurse who could be placed with them. She found her in St. Margaret, consort of Malcolm Canmore, who was renowned for her beneficent work for the sick and poor. Many further pictures brought the history of nursing down through the centuries to the time of Elizabeth Fry, Friederike and Caroline Fliedner, and Florence Nightingale, and the movement inspired and guided by her towards higher education and nursing knowledge. This was followed, said Miss Macdonald, by the movement for professional organisation, through State Registration, and the International Council of Nurses, the successful life-work of Mrs. Bedford Fenwick, President of the British College of Nurses.

Sweepstakes for Hospitals.

The board of management of Manchester Royal Infirmary has decided to call a conference of 50 governors, representing the 25 hospitals in Manchester and Salford, to discuss whether sweepstakes are a desirable method of raising funds.

A Hospital in Danger.

The Victoria Infirmary, Northwich, Cheshire, is said to be in some danger of subsidence in consequence of brine pumping. Portions of the park in which it stands are crumbling, and a fissure has appeared close to the hospital. Meanwhile there is heavy pressure upon the accommodation, and many patients have to be sent to Manchester and Liverpool institutions. The governors are considering the possibility of providing a new building outside the brine-pumping zone.

The Hospital Saving Association.

The annual report of this Association shows that during the year ending July 31st 1275 new groups were formed, and that the number of contributors increased by 158,431. There are now 7986 groups and 810,444 contributors. The year's contributions amounted to £438,354, as compared with £320,714 in the previous year. During the year 238,929 contributors and dependents, of whom 44,340 were in-patients, were treated at voluntary hospitals on the list of the Association. The number of days of in-patient maintenance was 911,873, giving an average length per case of 20·58 days. The total payment for hospital services for the year is £325,781.

Medical Diary

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, Dec. 8th.—5 P.M., UNITED SERVICES. Paper: Major-General H. Ensor: The Medical Services of a Division on Active Service.

TUESDAY.—5 P.M., THERAPEUTICS. Discussion on The New Mercurial Diuretics and Their Uses in Medicine, with special reference to Novasurol and Salyrgan. Opener: Dr. Evan Bedford. Other speakers will also take part. MEDICINE. Members of this Section are specially invited to attend and take part in the discussion. 8.30 P.M., PSYCHIATRY. Paper: Dr. N. H. M. Burke: Stigmata of Degeneration in Relation to Mental Deficiency.

THURSDAY.—8.30 P.M., NEUROLOGY. (Cases at 7.45 P.M.) Clinical Meeting at the National Hospital, Queen-square, London, W.C.1.

FRIDAY.—5.30 P.M., CLINICAL. (Cases at 4.30 P.M.) Cases: Mr. Cecil P. G. Wakeley: 1. Calcified Endothelioma of the Brain. 2. Acromegaly, Treated by the Introduction of Radon Seeds into the Pituitary Body. 3. Vascular Tumour of the Brain after Operation (shown at the October meeting). Sir James Dundas-Grant: 4. Headache Apparently Due to Enlargement of Middle Turbinated Body, Relieved by Intranasal Operation. Dr. Geoffrey Evans: 5. Bronzed Diabetes. Dr. B. Barling: 6. Arterial Obstruction in the Lower Limbs Treated with Angioxyl, &c. Dr. A. P. Cawadias and Dr. F. Parkes Weber: 7. Syndrome of Obliterating Arteritis of the Lower Limbs Treated with Angioxyl and Various Physical Agents. Dr. F. Parkes Weber: 8. Hæmochromatosis with Diabetes Mellitus, Hepatic Cirrhosis and Ascites. Dr. E. Stolkind: 9. Parkinsonian Syndrome showing Peculiarities of Speech Records. 10. Parkinsonian Syndrome (Post-Encephalitic Paralysis Agitans) with Affection of the Speech as First Manifestation. Dr. L. Hartston: 11. Still's Disease. Dr. Donald Hunter: 12. Hyperparathyroidism; Generalised Osteitis Fibrosa with Multiple Osteoclastomata. Dr. Philip Ellman: 13. Pulmonary Asbestosis. 14. Pulmonary Tuberculosis with Absence of Left Pectoral Muscle and Tuberculous Ulcer of Tongue. Other cases will be shown. 5 P.M., OPHTHALMOLOGY. Clinical Meeting at the Central London Ophthalmic Hospital, Judd-street, W.C. Tea at 4.30 P.M. Cases: Mr. J. H. Doggart: 1. Complicated Cataract of Obscure Origin. 2. Old Mustard Gas Burns. Other cases will be shown.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, Dec. 8th.—8.30 P.M., Discussion on The Pathological Conditions of the Eye Due to Inflammatory Changes in Other Parts of the Body, to be introduced by Mr. A. F. MacCallan, followed by Mr. Ernest Clarke.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.

THURSDAY, Dec. 11th.—7.45 P.M., Demonstration by Sir Aldo Castellani. 8.15 P.M., Major G. Shanks, I.M.S: A Demonstration (with lantern slides) on the Pathology of Epidemic Dropsy in Bengal; and Sir Aldo Castellani: A Paper on Minor Tropical Diseases (illustrated by lantern slides).

HARVEIAN SOCIETY.

THURSDAY, Dec. 11th.—8.30 P.M. (at Town Hall, Paddington Green, Harrow-road, W.), Dr. H. W. Barber: Skin Lesions of Interest to the General Practitioner.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.

FRIDAY, Dec. 12th.—8.45 P.M. (at the Miller General Hospital, Greenwich-road, S.E.), Mr. A. J. Walton: The Neuro-muscular Obstructions of the Intestinal Tract (Purvis Oration).

THE EUGENICS SOCIETY.

WEDNESDAY, Dec. 10th.—8.30 P.M. (at the Rooms of the Linnean Society, Burlington House, W.), Heredity in Education. Speakers: Dr. Maitland Radford and others.

BIOCHEMICAL SOCIETY.

FRIDAY, Dec. 12th.—5 P.M. (in the Department of Physiology, London Hospital), Communications and Demonstrations.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn-fields, W.C.

MONDAY, Dec. 8th, and following WEDNESDAY.—4 P.M., Mr. F. W. Twort: Diseases of Bacteria. (Free lectures.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Dec. 8th to SATURDAY, Dec. 13th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. Mon. at 4 P.M., a free lecture by Dr. Philip Figdor on Recent Advances in Osteo-arthritis.—CHILDREN'S CLINIC, Cosway-street, Edgware-road. Mon. at 2 P.M., special demonstration on Modern Methods of Infant Feeding by Dr. Bernard Myers. No fee.—ROYAL NORTHERN HOSPITAL, Holloway-road. Tues. at 2 P.M., special free demonstration of Urological Cases by Mr. Kenneth Walker.—METROPOLITAN HOSPITAL, Kingsland-road. Thurs., at 2 P.M., special free demonstration in Out-patient Department by Dr. P. Hamill.—WEST END HOSPITAL FOR NERVOUS DISEASES, 73, Welbeck-street. Special course in Neurology at 5 P.M. daily.—HOSPITAL FOR DISEASES OF THE SKIN, Blackfriars. Afternoon course in Dermatology.—INFANTS HOSPITAL, Vincent-square, Special afternoon course.—Further particulars from the Fellowship of Medicine.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Dec. 8th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose, and Throat Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Throat, and Ear Clinics. Operations.

FRIDAY.—10.30 A.M.: Ear, Nose, and Throat Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Children's Diseases Clinics. Operations.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

THURSDAY, Dec. 11th.—9 P.M., Dr. J. A. Drake: Some Common Skin Diseases, illustrated with Epidiascope.

UNIVERSITY COLLEGE, Gower-street, W.C.

MONDAY, Dec. 8th.—4.15 P.M., Dr. Charles Singer: Eighteenth Centenary of the Birth of Galen.

CITY OF LONDON MATERNITY HOSPITAL, City-road, E.C.

THURSDAY, Dec. 11th.—5 P.M., Mr. A. L. Walker: Management of Toxæmias.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Dec. 9th.—5 P.M., Dr. A. C. Roxburgh: Eruptions Due to Physical Agents.

THURSDAY.—5 P.M., Dr. W. N. Goldsmith: Pigmentation of the Skin.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.

WEDNESDAY, Dec. 10th.—4 P.M., Dr. C. E. Lakin: Demonstration of Medical Cases.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, Dec. 10th.—4.30 P.M., Dr. Jenner Hoskin: Value of Complete Cardio-analysis in Genito-urinary Operations.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Dec. 12th.—4 P.M., Mr. Lowndes Yates: The Indications for Removal of Tonsils.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

TUESDAY, Dec. 9th.—3.15 P.M., Mr. G. G. Penman: Fundus Changes in Diseases which Do Not Directly Affect the Eye.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

WEDNESDAY, Dec. 10th.—4 P.M., Sir Hubert Bond: Prevention of Mental Illness.

THURSDAY.—4 P.M., Dr. Marie Stopes: Positive and Negative Control of Conception in its Various Technical Aspects.

INSTITUTE OF HYGIENE, 28, Portland-place, W.

WEDNESDAY, Dec. 10th.—3.30 P.M., Mr. P. V. Cole: Some Preventive Aspects of Cancer.

NATIONAL INSTITUTE OF INDUSTRIAL PSYCHOLOGY, Aldwych House, Aldwych, London, W.C.

THURSDAY, Dec. 11th.—6 P.M. (in Room 9 at the London School of Economics, Houghton-street, Aldwych, W.C.), Mr. W. J. Pinard: Tests of Character; Mr. C. B. Fox: Industrial Psychology Applied to the Blind.

ANCOATS HOSPITAL, Ancoats, Manchester.

THURSDAY, Dec. 11th.—11 A.M., Mr. E. E. Hughes: Clinical Demonstration; 4.15 P.M., Dr. A. Renshaw: The Use of Vaccines.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, Dec. 9th.—4.15 P.M., Mr. A. H. Burgess: The Early Diagnosis of Breast Carcinoma.

FRIDAY.—4.15 P.M., Mr. Gordon Whitehead: Treatment of the Common Complications of Gonorrhœa.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINIC.

FRIDAY, Dec. 12th.—3.30 P.M. (at the Royal Infirmary), Mr. Connell: Syphilis as it Affects Bones and Joints.

Appointments

Middlesex Hospital: BONNEY, V., M.D. Lond., F.R.C.S. Eng., Obstetric and Gynæcological Surgeon; RIVETT, L. C., M.Chir. Camb., F.R.C.S. Eng.; and ROQUES, F. W., M.D. Camb., F.R.C.S. Eng., Asst. Obstetric and Gynæcological Surgeons.

Certifying Surgeons under the Factory and Workshop Acts: FRASER, D. (Dursley, Gloucester); PIGOTT, E., M.B., Ch.B. Manch. (Manchester West Central); and SULLIVAN, J., L.R.C.P., L.R.C.S. Edin., L.R.F.P.S.G. (Ebbw Vale).

Vacancies

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary.—Hon. Jun. Ophth. Surgeon.

Albert Dock Hospital, Connaught-road, E.—Res. M.O. At rate of £110.

All Saints' Hospital for Genito-Urinary Diseases, 91, Finchley-road. H.S. At rate of £150.

Birkenhead General Hospital.—Sen. H.S. £150.

Bridge of Weir Sanatorium, Renfrewshire.—Res. Asst. M.O. At rate of £200.

Burnley, Victoria Hospital.—Two H.S.'s. Each at rate of £150.

Bury Infirmary, Lancashire.—3rd H.S. At rate of £150.

Cheshire Joint Sanatorium, Market Drayton, Salop.—H.P. £250.

Carlisle, Cumberland, and Westmorland Mental Hospital, Garlands.—Jun. Asst. M.O. £350.

Chester Royal Infirmary.—H.S. £150.

Connaught Hospital, Orford-road, Walthamstow, E.—Sen. Res. H.S. At rate of £150.

Derbyshire Royal Infirmary.—Non.-Res. Radiologist. £100.

Dreadnought Hosp. Greenwich.—H.P. and H.S. At rate of £110.

Dunedin, New Zealand, Otago University.—Prof. of Midwifery and Gynæcology. £2000.

Dunfermline, West Fife Infectious Diseases Joint Hospital.—Asst. M.O. £400.

East London Hospital for Children, &c., Shadwell, E.—H.S. At rate of £125.

Essex County Council.—Asst. County M.O.H. £500–£600.

Evelina Hospital for Children, Southwark, S.E.—Hon. Dental Surg.

Exeter, Royal Devon and Exeter Hospital, Pathological Department.—Pathologist. £500.

Glasgow Corporation, P.H. Dept.—Deputy M.O. for Mental Services. £1000.

Grocers' Company, Grocers' Hall, E.C.—Research Scholarships. £300.

Hampshire County Council.—Asst. County M.O. £600.

Hospital of St. John and St. Elizabeth, 60, Grove End-road, St. John's Wood, N.W.—Gynæcological Surg.

Hull Royal Infirmary.—H.S. to Ophthalmic, &c. Depts. At rate of £150.

Hull Royal Infirmary, Sutton Branch.—H.P. At rate of £160.

Ilford, King George Hospital.—Hon. Physician.

Indian Medical Service.—Commissions.

Jersey General Hospital and Poor-law Infirmary.—Res. M.O. £200.

Kidderminster and District General Hospital.—H.S. £150.

Liverpool University.—Jun. Lecturer in Dept. of Pathology, £300.

London Female Lock Hospital, 283, Harrow-road, W.—H.S. At rate of £150.

London Hospital, E.—Surg. 1st Asst. and Reg. £300.

Manchester, Ancoats Hospital.—H.S. for General Surgery, &c. At rate of £100. Med. and Surg. Registrars. Each £100. Also Orthopædic Reg. (part-time). £25.

Metropolitan Hospital, Kingsland-road, E.—Asst. M.O. to X-ray Dept.

Miller General Hospital, Greenwich-road, S.E.—H.P. and H.S. At rate of £125. Also Out-patient Officer. At rate of £150.

Newcastle-upon-Tyne, Hospital for Sick Children.—Jun. H.S. At rate of £100.

New Zealand, Hawkes Bay Hospital, Napier.—Pathologist. £750.

Nottingham City Infirmary, Hucknall-road.—Two M.O.'s. Each £350.

Oswestry, Shropshire Orthopædic Hospital.—Asst. Orthopædic Surgeon. £450.

Perth Royal Infirmary.—Res. Jun. H.S., and H.P. Each £100.

Pontefract General Infirmary.—H.S. £150.

Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Hon. Anæsthetists. Hon. Dental Surgeon. Hon. Psychiatrist. Also Res. Anæsthetist, and Asst. Res. M.O. At rate of £100 and £80 respectively.

Queen's Hospital for Children, Hackney-road, E.—H.S. At rate of £100.

Radium Institute, Riding House-street, W.—H.S. At rate of £150.

Reading, Royal Berkshire Hospital.—H.P., and Two H.S.'s. Each at rate of £150.

Royal Dental Hospital of London, 32, Leicester-square, W.C.—Hon. Radiologist and Lecturer in Radiology.

Royal Northern Hospital, Holloway, N.—H.S. At rate of £70.

Royal Waterloo Hospital for Children and Women.—Res. H.S. At rate of £100.

Ruthin Castle, North Wales.—Jun. Res. Physician.—£200.

St. Mary's Hospital, W.—Surgical Registrar. £200.

St. Peter's Hospital for Stone, &c., Covent Garden, W.C.—Clin. Assts.

St. Thomas's Hospital.—Chief Asst. in Physico-therapy Dept. £250.

Salford Royal Hospital.—Res. Surg. O. At rate of £200. Also H.P., Two H.S.'s, and Cas. H.S. Each at rate of £125.

Salisbury, General Infirmary.—H.S. £150.

Sheffield Royal Hospital.—Ophth. H.S. Also Res. Anæsthetist. Each at rate of £80.

Sheffield Royal Infirmary.—Ophth. H.S. £80–£100. Clin. Asst. to Ear, Nose, and Throat Dept. £300. H.P., H.S., Asst. Aural and Ophth. H.S. Also Asst. Cas. O. All at rate of £80.

South London Hospital for Women, South Side, Clapham Common, S.W.—Three H.S.'s. Each at rate of £100.

South Shields, Harton Hospital.—Two H.S.'s. Each £120. Also X Ray and U.V.R. Operator. £250.

Staffordshire County Council.—Asst. Bact. and Path. £600.

Talgarth, Breconshire, South Wales Sanatorium.—Asst. Res. M.O. £250.

Tilbury Hospital, Essex.—H.S. At rate of £150.

Watford, Herts, Peace Memorial Hospital.—Res. Surg. O. At rate of £150.

West African Medical Service.—Medical Officers.

West London Hospital, Hammersmith-road, W.—Non-Res. Cas. O. £250. Also H.P., H.S., and Aural and Ophth. H.S. Each at rate of £100.

Weston-Super-Mare General Hospital.—Res. H.S. At rate of £150.

Western Ophthalmic Hospital, Marylebone-road, N.W.—Surg. Reg.

Wigan, Royal Infirmary.—H.S. At rate of £150.

Woking and District Victoria Hospital.—Res. M.O. At rate of £100.

Woolwich and District War Memorial Hospital, Shooters Hill S.E.—H.P. At rate of £100. Also Part-time Pathologist £300.

Worcester General Infirmary.—Jun. Res. M.O. £120.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Chipping Campden (Gloucestershire); Llandovery (Carmarthenshire); and at Stromness (Orkney).

Births, Marriages, and Deaths

BIRTHS.

DALTON.—On Nov. 11th, at Fonnereau-road, Ipswich, the wife of Dr. C. H. C. Dalton, of a son.

DAVENPORT.—On Nov. 24th, at Adelaide-road, N.W., the wife of Robert Davenport, F.R.C.S., of a daughter.

HARRIS.—On Nov. 17th, at a nursing home, Muswell Hill, the wife of Dr. J. R. Harris, of a son.

ILLINGWORTH.—On Nov. 26th, at Palmerston-place, Edinburgh, the wife of C. F. W. Illingworth, F.R.C.S., of a son.

INKSTER.—On Nov. 15th, at Middlesbrough, the wife of John Inkster, M.D. Aberd., M.R.C.P. Lond., of a daughter.

NELSON.—On Nov. 24th, at Harley-road, N.W., the wife of H. P. Nelson, F.R.C.S., of a daughter.

PATERSON.—On Nov. 20th, at Chatfield, Parkstone, the wife of Dr A. R. Paterson, of a son.

SMITH.—On Nov. 26th, the wife of Dr. Wilson Smith, Sunbury gardens, Mill Hill, N.W., of a daughter.

STOCKER.—On Nov. 21st, at Lancaster, the wife of Major C. J. Stocker, I.M.S., of a son.

MARRIAGES.

MAITLAND—WEMYSS.—On Nov. 24th, at St James's Church, Cupar, Fife, David Randolph Maitland, M.B., Ch.B., to Barbara Mary Carnegie, only daughter of Mr. E. H. Wemyss, of Kirkton, Fife, and Mrs. Wemyss, at Myres Castle, Auchtermuchty, Fife.

DEATHS.

GALE.—On Nov. 23rd, at Stuston Lodge, Diss, Annabella Murdoch Gale, M.D., B.Sc.

HINGSTON.—On Nov. 28th, at a nursing home, suddenly, Richard Hingston, M.R.C.S., L.R.C.P., late of Liskeard, Cornwall, aged 71.

HORWOOD.—On Nov. 16th, at Smallburgh Rectory, Norwich, Oswald Ryle Horwood, Clerk in Holy Orders, Physician and Surgeon.

MAYSTON.—On Dec. 1st, at Upper Clapton-road, John Harry Mayston, M.R.C.S., L.R.C.P., in his 46th year.

MILLER.—On Nov. 27th, at Cheviot, Neasden, Walter Frederic Miller, M.B., B.S., late of Wainfleet, aged 59.

NICHOL.—On Nov. 28th, suddenly, at Ethelbert-crescent, Margate, Frank Edward Nichol, M.B., B.Ch., J.P., aged 69 years.

SHAW.—On Nov. 25th, Dr. Arthur Hemans Shaw, of Cranbrook, Kent, aged 70.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

PITFALLS IN THE NEW MOTORING LAW.

THE passing of the Road Traffic Bill, 1930, has confronted every motorist in the country with a radical change in the motoring law. Great efforts have been made by the press, assisted by competent lawyers, to prepare them for their new duties, but there must be many motorists still who would not do very well in an examination on the subject. One of the latest of the expositions was given on Friday last to the Solicitors' Managing Clerks' Association by Mr. C. Doughty, K.C., who demonstrated a few traps which possibly have escaped the notice of other advisers. One of the most serious of these for the ordinary owner-driver is contained in the provision which lays down that any person who gives false information for the purpose of obtaining a licence or certificate is liable to a fine of £50 or four months' imprisonment. "Unfortunately,"—to quote the *Mikado*—"there is not a word about a mistake, or not knowing, or having no notion. There should be, of course, but there isn't." The section does not contain the word "wilfully," and an offender will be liable to the penalty for an innocent mistake made by himself or—what is more likely—by an agent. There will be plenty of scope for argument over the question of what information is material and, as Mr. Doughty said, what time must elapse before a former accident may be discreetly and safely forgotten.

The section governing the information that must be contained in the certificate of insurance is not so Draconic, and the responsibility lies chiefly with the company. The motorist should remember that he must carry this document with him whenever he takes the car out, and that he is bound to produce it, not only on the demand of a policeman, but whenever he is requested to by any person who may reasonably make the request. The provision is apparently designed to enable interested parties to ascertain whether the car is being driven under the conditions of the policy, or by a person entitled to drive in accordance with it. The certificate, according to the Act, must contain particulars of the limitations on the use of the car, such as those prohibiting its use for trade purposes or speed testing. Mr. Doughty said that it was probably unnecessary to name every person who was covered against third party risks by the policy, and that the law would be satisfied if the class of person were named; for example, relatives, friends, or servants.

The Act recognises three forms of unlawful driving: reckless or dangerous driving, for which the penalty is £50 or four months for the first offence; a new offence called careless driving; and a breach of the speed limit, which is not to be imposed on private cars. A driver charged with careless driving may be convicted of dangerous driving, even though the substantive evidence is that he was going too fast, if other circumstances are proved that aggravate the offence—such as the presence of cross-roads or the possibility (not the fact) of other traffic being in the vicinity. Dangerous driving being an indictable offence, it is therefore open to a person accused of one of the minor offences to elect to be tried by a jury. In police-courts it is probable, said Mr. Doughty, that a separate summons will be issued for each charge; the driver will then presumably plead guilty to the lesser offence in the hope of escaping the consequences of the greater.

Mr. Doughty pointed out a quaint possibility arising from the expression "under the influence of drink or drugs." Since the conjunction "or" presumably creates two mutually exclusive offences, it will be a good defence when charged with drunkenness to plead the influence of drugs. Both Mr. Doughty and Mr. Justice Swift, who took the chair, anticipated a considerable increase in motor-car litigation and prosecution. Motorists will be well-advised to proceed with very great caution for a considerable time after the new legislation comes into force.

CECIL HOUSES FOR HOMELESS WOMEN.

ON Nov. 19th, Mr. Ramsay MacDonald opened the Fourth Cecil House at 179, Harrow-road, London, W. This new public lodging-house accommodates 60 women and 17 babies, with a special sitting-room and dormitory for the mothers and children. Since the first house was opened in 1927 over 148,015 beds and 17,956 cots have been occupied. Nevertheless, it is stated that the supply by no means equals the demand and that each week some 40 to 80 women have to be turned away through lack of room. Once the initial expenditure—purchase of freehold, reconstruction, equipment—is defrayed from moneys subscribed by the public each house is entirely self-supporting. The aim is to establish another house as soon as possible in order to meet the needs of winter. Particulars may be had from the honorary organising secretary, Mrs. Cecil Chesterton, at the offices at 11, Golden-square, W.1.

CHOCOLATES.

WE have received from Messrs. Cadbury Bros., Ltd., an assortment of their new productions, timed no doubt to coincide with the Christmas season. The collection of sweetmeats entitled "Golden East Assortment" is likely to prove a popular present. Among other delicacies, new or put up in a new way, may be mentioned the Brazil-nut milk chocolates, Princess Elizabeth chocolates, and the Carnival chocolates, all of which are packed in appropriate fashion to form cadeaux. This packing of what the manufacturers call "the silent theatre box," has been devised to meet the criticisms of playgoers who complain of the rustling of receptacles for sweetmeats. The chocolates are packed between non-rustling paper, and a pad enclosed in cellophane is fixed inside the lid. The lid itself is covered in cellophane and need not be broken when opening, as a narrow seal can be torn noiselessly to free a hinged lid.

A selection of the firm's well-known wafer biscuits has also reached the office, with sample tins of Bourneville cocoa and cup chocolate.

AN ECCENTRIC.[1]

THE biography of Ronald Firbank has been sent to THE LANCET for review, presumably because the author, or some of those who supplied personal reminiscences in elucidation of the subject, believed that Firbank's life was of medical interest. A more charitable view can be taken, and we may hold that we have here an example of eccentricity of conduct; and where this may begin is often hard to say, while where it may reach a stage to which the term is no longer applicable, is still harder to define. It is made very clear in the book that Firbank was his own enemy and a very uncomfortable friend, while the comments on his neglected writings will arouse curiosity.

APPENDICITIS AMONG THE CHINESE.

THE popular opinion that Chinese are little susceptible to appendicitis—less susceptible than Europeans or Americans—has been again submitted to examination, this time by Dr. J. Heine, pathologist during 1928–30 to the Tung-Chi University and the Paulun Hospital at Shanghai. His results appear as a supplement to the *Archiv für Schiffs- und Tropen-Hygiene* of Leipzig. He concludes that appendicitis is no rare disease among Chinese, but that they are less

[1] Ronald Firbank, a memoir by Ifan Kyrle Fletcher, with personal reminiscences by Lord Berners, Augustus John, V. B. Holland, and Osbert Sitwell, with portraits by Alvara Guevara, Augustus John, R. A., Wyndham Lewis, and Charles Shannon, R.A. London: Duckworth, 1930.

apt than others to consult European doctors about it and to undergo operation. This conclusion accords with the opinion of Dr. Elsa Uhlenhuth quoted in THE LANCET last year (1929, i., 618). Dr. Heine had three sources of information. Among 856 specimens sent him after operations on Chinese, there were 37 appendices, of which 36 were inflamed (4·2 per cent.); while among 185 specimens sent him after operations on Caucasians there were 40 appendices, of which 32 (17 per cent.) were inflamed. He made 32 post-mortem examinations on Chinese, aged from 2 to 55, and examined all the appendices, naked eye and microscopically, at least three sections of each being taken. Of these 28 (82 per cent.) were abnormal, but 6 were tuberculous and 3 others were associated with intestinal disease, leaving 19 examples of "idiopathic" appendicitis (56 per cent.) of which 5 had recovered and 14 were still in the stage of convalescence. In his well-documented paper Dr. Heine gives facts and figures which lead him to think that neither climate, race, food, nor intestinal parasites are involved in the ætiology of the disease.

NEW PREPARATIONS.

ALMATA (Messrs. Keen, Robinson and Co.).—The following is the analysis of this preparation which has already been favourably reported upon: egg yolk, supplying protein, fat, and vitamins A, B, D, E; butter, supplying fat and vitamins A and D; maltodextrins, supplying carbohydrates; and decitrated fruit juice, supplying vitamin C. In accordance with this analysis the claim is made that the food approximates to breast milk more closely than any other infant food, while the fat and calcium absorption are high. The mineral content is similar to that of breast milk, and the laxative action is due to the maltodextrins.

(1) CAMPHRO-SALYL AND BENZYL SALICYLATE, (2) FERRUGINOUS AMPOULES.—We have received from the English agents, Messrs. Wilcox, Jozeau and Co., 15, Great Andrew-street, London, samples of these new remedies emanating from the Laboratoires Fraisse, 8 Rue Jasmin, Paris. (1) Camphro-salyl is a compound of benzyl salicylate and camphor. Benzyl salicylate is an exact chemical substance of the nature of a phenol ester and is obtained by the action of salicylic acid on benzyl alcohol. This crystalline powder was found to be analgesic but when combined with camphor its effect was much increased. The compound is put up in ampoules and is sold in boxes of six, each ampoule containing benzyl salicylate 0·50 g., camphor 0·10 g., and olive oil 5 c.cm. It is recommended for its effectiveness in acute or chronic neuritis.

(2) Ferruginous ampoules is a preparation of the cacodylates of iron and strychnine with sodium glycerophosphate, and has been used with success in anæmia following accident or surgical operation, and that accompanying the menopause or uterine fibroids. In this preparation the chemists appear to have triumphed over the difficulty that few salts of iron are assimilable subcutaneously and that treatment by injection is generally very painful.

THE MEDICAL DIRECTORY FOR 1931.

THE eighty-seventh annual issue of the Medical Directory, which reached us in November, contains 55,035 names, being 498 in excess of those in the issue of the previous year. The increase of names is quite unevenly distributed among the seven sections of the directory. In Wales (—19), Scotland (—32), Ireland (—166), and the Services (—5) there has been an actual decrease, the extent of which we give in parentheses, more than counterbalanced by the surplus of 73 names in the London list, 308 in the Provincial list, and 339 among Practitioners Resident Abroad. An analysis of this changing distribution would throw interesting light on the trend of medical practice in our days. Apart from these changes, which increase the total bulk of the book by only 16 pages, the directory is little altered. The passing of the Local Government Act has involved the disappearance of the familiar heading "Metropolitan Asylums Board," and the omission of the words "poor-law" and "infirmary" as applied to general hospitals. Once again we congratulate the publishers on the vigilance and enterprise which has produced something unique among the directories of the world. The addition of an alphabetical index covering the names in all sections of the directory would make it a perfect work of reference. The publishers are Messrs. J. and A. Churchill, and the price is 36*s*. net.

THE MEDICAL REGISTER.

To the Editor of THE LANCET.

SIR,—I desire to remind those who find it essential to know whether a practitioner is *legally* qualified or not, that in order to facilitate their work the Council publishes an office edition of the Medical Register printed on inexpensive paper, and bound in boards. This edition contains precisely the same names and lists as the official edition. It is issued from this office at a special charge of 10*s*., post free, but no copies can be issued unless they are ordered and paid for prior to Dec. 31st. I shall be happy to send an order form upon application.

The Medical Register is the official publication issued under the Medical Acts, and contains the names of all legally qualified practitioners. There is no other publication which takes its place. The Council also issues each month a list of additions to and deletions from the Register. The charge for these will be furnished upon application.

I am, Sir, yours faithfully,

NORMAN C. KING,
Registrar.

General Council of Medical Education and Registration of the United Kingdom, 44, Hallam-street, London, W., Dec. 1st, 1930.

A SANITARY TOILET DEVICE.

THE Salvas Toilet Roll (made by Messrs. Salvas, 65a, Fenchurch-street, London, E.C. 3) consists of two layers of paper. The outer layer, which is thin and shiny, is merely a waterproof protection for the hands, but the inner layer, resembling compressed cotton-wool, is both soft and absorbent, without being fluffy. This inner layer can be moistened and the paper can thus be used as a clean damp sponge without soiling the fingers. The accompanying illustration shows the Salvas Sanitary Toilet Requisite, which is a convenient apparatus for moistening small sections of the paper as they are wanted. The end of the roll is drawn upwards over a cylinder containing about a pint of water. The top of the cylinder is open, and by means of a small roller, controlled by turning a knob, the paper is lightly damped but not saturated. An antiseptic—e.g., the Salvas disinfectant concentrated pine tablets—can be added to the water.

The toilet is, of course, completed with a small dry piece of the absorbent paper, but there are real and obvious advantages in beginning with soft and damp application, and Salvas paper is excellent for the purpose. The "toilet requisite" once demonstrated should not prove an impossible obstacle either to the unintelligent or the hasty; it may be had in many different colours and qualities at prices from 7*s*. 6*d*. to 2 guineas. The price of the toilet roll refills is 6*s*. 6*d*. per dozen, and as the paper is thick the length is below the average. But its use as a moist sponge might make it relatively economical.

ADDRESSES AND ORIGINAL ARTICLES

THE DANGER OF SPECIALISATION.*

By A. E. Barclay, M.D. Camb.,

LECTURER IN MEDICAL RADIOLOGY AND ELECTROLOGY IN THE UNIVERSITY OF CAMBRIDGE.

I believe the Greek philosophers held that no man of education should specialise—"nothing in excess" is a Greek proverb—it was for the slave to specialise, and for the man of wider knowledge and broader outlook to criticise and appreciate the work in arts and crafts in which his slaves were specialists. The outlook upon specialisation to-day has changed, but the underlying principle is the same—a very broad basis of education is essential for critical appreciation of specialised knowledge.

Specialisation has become essential because the receptivity of the human mind is limited. It is said that the specialist is a man who knows more and more about less and less, while the practitioner is one who knows less and less about more and more. And therein lies the danger. The ordinary man who becomes a specialist is working at some small aspect of a problem, at filing and polishing one cog in a wheel in a chain of wheels in a vast and most complicated machine—is it likely that he can see in its proper proportions the value of the little bit of work that he is doing? And it is this danger that runs through the whole of those branches of science about which I know anything.

In the medical curriculum the student who goes straight through the course spends two years on pre-medical subjects, physics and biology, two years on anatomy and physiology, with dissecting-room and laboratory work, and three years in clinical studies in the hospitals. It is nearer eight than seven years before a student can qualify, and it is not till he has qualified that he is able to take responsibility and see his life-work from an angle that is far different from that of examinations. The medical student of to-day has to start his pre-medical training in the last two years of his school life—when and how can he get the general education on which to base his long years of purely specialist study?

Practically every teacher aspires to be a specialist in one form or another. His research record rather than his teaching ability is the keystone to his appointment. His living interest lies in his special research—his bread and butter is in the heavy burden of routine teaching. When a teacher is placed in charge of a special department it must be his aim and object to further its interests. Naturally he will be proud of the work that is done in his department, and he will not underestimate its importance. He will attend meetings and congresses where he will talk his own particular "shop"; and there will meet others who, like himself, have long come to the conclusion that this particular branch is the one that really matters in the curriculum. This, stated with some exaggeration, no doubt, is the natural attitude that has come out of the multiplication of specialties, each in its own department, each in its isolated building if it can get one, each with its own journals, and often with its own jargon. And if this man has to outline a section of a course for students, whether of medicine or anything else, he is not likely to minimise the importance of the knowledge that his department can teach, or to give way to other subjects which are of secondary importance in his eyes.

Little wonder that the medical curriculum has grown unwieldy, that the course cannot be completed in less than seven to eight years after matriculation, and that a further year is threatened. And withal it is sometimes forgotten that to the medical student the most essential of all studies is the study of man. He can be taught a great deal, but this one thing he has to learn for himself. No teaching, except that of Mother Wit, can give him the wisdom that leads to an understanding of human nature—call it psychology if you will, so long as you do not think of it in terms of time reflexes and other laboratory methods. The student has little chance of developing this essential part of his training, except by contact with his fellows, until he gets into the wards. Yet this is his life's work.

The Fallacies of Anatomy and Physiology as now Taught.

Most students notice that there is a very wide gap between the subjects of the second M.B., the anatomy and physiology, and the practical medicine of the final years. In teaching the anatomical and physiological sides of radiology, I meet men who have been qualified for a few years, and nearly all of them seem to have forgotten these subjects to an astonishing extent, yet, so far as I can tell, they do not seem to be any worse or better physicians on that account. Surely there is something far wrong that this should be the case! I believe the trouble lies in the fact that these have become specialist subjects, taught by specialists, in departments that are separated from those in which the practice of medicine goes on.

This was brought home to me by a new text-book published just a year ago that came into my hands recently. One knew vaguely of the wonderful progress in physiology, out of which have come some of the greatest advances in medicine—insulin, liver extract, hormones, and vitamins. I turned the pages of this book to see how radiology had affected the teaching of what I had learned of the physiology of the alimentary tract. Looking to the name index in this attractive volume, I found a list of 360, whose work is acknowledged, but not a single one who has studied the human alimentary tract by radiological methods. In vain one sought for such names as Rieder, Holzknecht, Hurst, Forssell, Haudek, Case, Carman, Haenisch, Kaestle, Groedel, Akerlund, Alvarez, Berg, Scott, Holland, and all those others we know so well in radiology. And when one examined this book, one was staggered to find in this section the same physiology that we were taught 30 years ago or more. The whole subject that the radiologist knows so well is a blank! The experiments of Beaumont 1833, "The Backwoods Physiologist," on Alexis St. Martin—he of the gunshot gastrostomy—still hold the field! The stomach is still described as normally a bilocular organ during the process of digestion, and Beaumont's actual descriptions are reproduced! The mechanics of digestion, the importance of which probably only a few radiologists yet fully realise, receive scant attention.

* Extracts from the Silvanus Thompson Lecture delivered before the British Institute of Radiology incorporated with the Rontgen Society on Dec. 5th, 1930. The lecture will appear in full in the British Journal of Radiology.

Peristalsis is noted only in a few passing words; the extraordinary and extremely important "mass movement" of the large intestine, first described 19 years ago, is not even mentioned. In fact, the intestinal tract is just the same inert chemical test-tube that it was 30 years ago, in which everything takes place according to formulæ. After many years' observation of human stomachs of all types, one has no patience with such armchair pictures based on the study of one abnormal subject. The futility of such conceptions has been obvious for the last 20 years or more to any person who took the trouble to watch the opaque meal examinations that are conducted by thousands every day in our hospitals.

More than 30 years ago W. B. Cannon, then a young physiologist, investigated the intestinal tract of animals with bismuth and paved the way for human investigation. He even applied the method to man, but very soon returned to the physiology department and to animal experiments. So far as I know, no other physiologist pursued the subject, and it was left to radiologists, men who had no special knowledge or training, and who were overburdened with routine work, to hammer out for themselves as best they could the normal and abnormal mechanism of the human alimentary tract. Apparently, there are still physiologists who do not know of the pre-war work that has been done. In all good faith they go on teaching bilocular stomachs, acid control of the pylorus, and other relics of a bygone day when speculation passed for knowledge. Our medical students have the right to be taught such known things as will prepare them for the practice of medicine. Conversely, they surely have the right to be delivered from the necessity of being taught things which are obviously wrong, or which are merely pious armchair hypotheses.

To-day radiologists rely implicitly on disorders or irregularities of the mechanics of the intestinal tract to guide them to a diagnosis with a degree of accuracy that is extraordinary, especially considering that they are dealing only with shadows. Lord Moynihan recently said that the X ray examination of the stomach is of more value than all other methods put together.

I am not suggesting that there are no fallacies in the opaque meal method of investigation, but what I do maintain, as the result of very many thousands of examinations, is the futility and certain inaccuracy of observations based on a limited number of individuals. For this reason it is perhaps providential that no serious attempt has been made to do radiological work in the laboratories, but it makes one more than sceptical of the chemical work on the alimentary secretions that emanate from such laboratories. This must also be open to the same fallacies—not one, or ten, or a hundred observations can justify definite conclusions about either the chemistry or the physics concerned. If gross variations of form and function are possible within the limits of normality, how can we dare to pretend scientific accuracy from animal or test-tube experiments of such variables as human gastric and intestinal secretions, that we know are subject not only to mental and physical fatigue, but to every emotion—as was shown 100 years ago by Beaumont—and to every sensation that finds expression in the human body?

The book I have referred to was written for medical students, and, as I have said, it contains sections that are not only futile but utterly misleading in an extremely important department of physiology. Is this book typical? Perhaps not, but that such an important section could appear and pass without comment in the glowing reviews of two editions that I have seen shows that the vitally important physiology that has been revealed in X ray departments has not even yet been noted by some physiologists.

No branch of science can afford to stagnate—it must progress to justify its existence, and in such subjects as anatomy and zoology the only way of progress used to be in the further development of the descriptive methods that have been handed down for generations. This extended to comparative studies and other fascinating branches, but of the descriptive type and all dealing with form, and that form being the dead subject that, as regards the internal organs, is as different from the living as death from life. The living conception of human anatomy and physiology that is opened up by radiology presents a new outlook on such subjects. Roughly, anatomy deals with form, while physiology is confined to function. To the radiologist and to all who study the living subject, this or any other artificial division is altogether impossible. The radiologist cannot study form without considering function, nor can he consider function without taking form into consideration. From the radiological point of view, anatomy and physiology cannot be divorced from each other or from pathology; the one slides imperceptibly into the other, and there is a wide border-line that is common to each. To divide in order to classify may be convenient, but it is wrong, unnatural, and leads, in practice, to a mistaken conception. May I take a simple example from the appearance and behaviour of the stomach? In our anatomical conception, we describe the organ in one state as J-shaped, and at the same time we note that the tonic action—function or physiology—of its muscle is good. Perhaps the patient turns faint or is startled, and the whole description goes wrong—the stomach changes its shape and sags down because the tone (physiology) of the muscle has altered. The form and the function of this and other muscular structures are interdependent. Radiologically, at any rate, there is no dividing line in this section between anatomy and physiology. There is also a point where physiology and pathology melt imperceptibly into each other, and the further we trace things back towards the elements, the more impossible it becomes to draw a dividing line and say where the normal cell changes its character and becomes pathological. So far as radiology is concerned, these three essentials of all medical training, anatomy, physiology, and pathology, are so bound up with each other, and so intimately concerned with the diagnostic side of radiology that it is little short of folly to attempt to separate them, and regard them as separate subjects.

In other biological sciences, some of which enter the early stages of the medical course, radiology offers the same vistas of progress. In zoology, for instance, a fertile study would be a comparison of the mechanism of digestion through the animal kingdom, leading up to man.

The Radiologist in the University.

The four great biological subjects—zoology, anatomy, physiology, and pathology—are housed in separate departments, each with its own head, each ploughing its own furrow. Are those furrows converging on one object—the preparation of the medical student for his life's work?

Radiology must come into all the biological sciences, whether human or animal. Here and there we find an X ray apparatus in an anatomy or physiology department, for the most part unused for lack

of a competent radiologist. There are exceptions, but, speaking in general, radiology is not yet employed in the biological sciences where it could bring the same tremendous incentive for progress that it has already supplied to clinical medicine. The need for university departments of radiology is evident. If attached to any one of the existing sections—e.g., anatomy or physiology—they are not likely to fulfil their destiny, unless the director of the section has a breadth of view that takes his subject roaming into preserves that, by tradition, belong to other departments. To the radiologist there is no artificial barrier between sections. Just as in a hospital, the department of radiology should be a meeting house where different interests converge, draw from each other's store of knowledge to mutual advantage. In a sense it should not be self-contained, but rather a service department that is provided to meet the need of each research as it presents itself. Here the accumulated store of combined experience is at the service of all. But it must be something far more than an X ray apparatus and equipment which can be bought for a few hundred pounds. The services and coöperation of an *experienced* radiologist (by that I mean a man who has himself examined thousands of patients and not just a scientist who has taken a medical qualification) should be at the disposal of all biological departments of every university, so that living human and animal problems could be worked out, apart from the rush and distraction of the hospital X ray services.

Scientific and especially medical education has, like Topsy, "just growed." Even if we see possibilities of improvement, we are hampered not only by the conservatism of tradition, but by the personnel, buildings, and machinery that have grown up in the course of centuries. A place, however, must be found for radiology, for our students must be taught something of the subject. The question is how much and by whom is it to be taught? Some maintain that all medical students should take a course of lectures, and also a period of actual service in an X ray department, while some surgeons and physicians hold that all the radiology the student needs should be taught by them. To me it is clear that every student should in the first place be taught the radiological aspects of anatomy and physiology in these departments. He must also learn the uses of radiations in diagnosis and treatment, and what he can expect in the way of assistance if he calls in a specialist. This knowledge should be imparted by the radiologist himself in a short course of, say, eight lectures, but there is no need whatever to teach students anything of the very highly specialised technique. In many universities such a course is already in the syllabus. It is yet one more set of lectures added to the curriculum! And every special service argues the same way, wanting some of the student's time. In each instance the same principle might be applied as in radiology—all technique might with advantage be eliminated except for those who intend to specialise. Why should the student learn masses of detail, which seem to have no practical application, not only in physiology and anatomy but in every subject? Why should we tempt providence by making all learn the technique of surgical operations which only a few will ever have the skill or experience to perform efficiently, the detail of chemical, bacteriological, and other technique, only a fraction of which they can possibly use? Each specialist is trying to teach as much as possible of his own subject to men who, in nine cases out of ten, will neither have the opportunity nor the wish to practise that particular specialty. For that one man in ten the teaching is too little to be of real value; for the other nine, it is just so much detail to cram up for examinations. I believe that the medical student could be adequately prepared for his life's work in a far shorter period. It is, however, only by coöperation, placing the common good before departmental interest, that the student's burden can be reduced without impairing efficiency. Each branch needs to know more and to see more of the work of the other branches, so that they can coöperate effectively in the team. The danger of specialisation is, of course, well recognised, and steps are taken to combat it in various ways. Team-work, however, seems to be the only practical solution.

The Specialist Practice of Radiology.

Now let us look at the other side of the picture. How is the specialist practice of radiology shaping its course? Is it, like so many other branches, endeavouring to build walls around itself, or is it widening out its sphere of influence and usefulness? We have our own journal; that is inevitable, for many of our contributions lie on the borderland—they are often too physical for publication in the medical, and far too medical for the physical journals. Our journal is essential, fills a unique place, and must always be an integral part of radiology. But radiology has become ubiquitous, extending into every branch of medicine. We can hardly take up a journal that does not contain some radiology. Whether we like it or not, radiology, even specialist radiology, has become diffused—the radiologist, loyally backed by the physicist and manufacturer, has laboured to develop his special methods, and one after another they are being absorbed into the grasping folds of other special branches of medicine. These, having learned from the radiologist the technique and value of the methods he employs, quite naturally and without the slightest shame take them for their own use. I fear it is no use acting the part of the small boy whose toy is taken from him by a bigger boy—"that is my toy," says he; "that *was* your toy," says the big boy and just walks away with it. One by one we are seeing our toys taken—dental, orthopædic, fracture, dermatological, urological, tuberculosis work, gastric work, radium—and the radiologist is left in different centres with just those branches of his art that have not been claimed by the stronger boys, who quite often make but a sorry show of this acquisition. Some of this loss is inevitable, and we might as well face it, but a large part of it could be avoided. If the radiologist is really competent and delivers the goods, the highest class of goods at a fee that is reasonable, he will almost invariably retain the practice in which, if he is expert, he will easily beat his untrained competitors—but he must be a real expert. There is room for the first-rate clinical radiologist anywhere; the second-rater—in radiology as in all else—is liable to go to the wall.

It is evident, however, that even if he would the radiologist cannot erect a wall around his preserve, and, in fact, the only fence, or self-defence, he can put up is his mastery of his own sphere of medicine, a sphere that is, I venture to say, wider than any other in the whole range of medical practice. Specialisation has been let loose and has abundantly justified itself. What attitude do we, as radiologists, take in the matter? The answer as regards diagnostic radiology is simple—although we happen to work in a laboratory we are essentially clinicians, and we must be a clinical service department, self-centred and self-contained only because our methods are so highly specialised

that centralisation of our service is the only way to progress and efficiency.

Radiology covers such a wide field and one that is still extending so rapidly that it is now impossible for any radiologist to be anything other than a general practitioner in the subject and to specialise in certain branches. Radiotherapy alone, for instance, has become a subject of such proportions and depending on such a variety of laboratory research that, unless he specialises in therapy, the radiologist cannot keep up with progress in this one important branch. Therapy, therefore, cannot but be a special service department drawing its cases from every other department, the responsibility for the special treatment being that of the radiotherapeutist.

The radiologist does not aspire to be a physician, a surgeon, a gynæcologist, a physiologist, an anatomist, or to be an expert in any of the branches he touches. His unique position as the first medical man to observe X ray appearances has forced him, however, into pioneer work in many fields in which he has had to find his own way. History repeats itself, and we think of the pioneer enthusiasm of our forefathers for leeches and bleeding; of another generation for indiscriminate gastro-enterostomies, wholesale dental extractions, tonsil and adenoid operations, and in the present generation, ultra-violet rays, vitamins, and, may I add, the surgeon's discovery of radium, &c. In our own particular sphere it was the radiologist's misfortune, not his fault, that he had to plunge straight into pathological studies in hospital practice before the normal had been investigated. This has had serious consequences, and each of us can think of mistakes that were due to want of knowledge of the normal and want of correlation with the clinical. The worst and most extensive blunder of this kind and one that had and still has very serious consequences was the misinterpretation of the shadows at the root of the lung. For a period normal shadows were interpreted by some observers as definite evidence of hilum phthisis. Subsequent history has proved the diagnosis to have been wrong in the vast majority of cases, but on the strength of this X ray diagnosis men were exempted from army service by the hundred, and others were sent to an invalid life and placed under the heavy disability of being tubercle suspects. The clinical diagnosis of the condition by the physician was on too weak a foundation to refute the radiological findings and, naturally, there were no post-mortems. It took years of scepticism followed by ridicule before we realised that this "X ray disease" was nothing more than a very serious error of judgment on the part of those who studied the chest by X rays without adequate experience of the normal. Yet the blame should hardly rest with the radiologist, for he had no foundations in either anatomy or physiology that had been corrected to X ray or living standards.

The same thing applies to the alimentary tract—the study of pathology has preceded the study of the normal. Many an abdomen has been opened because of a reported kink, a dropped stomach, or dropped flexures of the colon, which were, for the most part at any rate, mere variations of the normal. We still see reports on constipation in which the radiologist talks of a dropped transverse colon as the cause of the trouble. When he has seen the stomach and the colon functioning normally in spite of the most weird anatomical dispositions, he will cease to jump to the conclusion that these things are the most probable, but rather the least likely cause of the symptoms.

It was years before even the radiologist really appreciated the fact that the stomach and all the alimentary tract was a living muscle, capable of extraordinary variations within the normal, and, naturally, he attributed to some of these variations the liability for symptoms from which the patient suffered—he was just finding his way, blazing a trail in new country where there were no signposts to guide him.

Those were great days of adventure for the radiologist as he explored unaided into the unknown that was revealed by X ray methods. The present position of radiodiagnosis of chest and alimentary conditions is something of which he may be justly proud. There is still a long way to go. But that is no reason why what has been done and really proven should not be accepted by other departments. Radiologists have established certain facts by the study of an enormous bulk of human material to which no other department has had access. Only by such concentrated study is it possible to build up a true conception of the living anatomy and physiology.

VALVULAR DEFECT IN RELATION TO VARICOSIS.

AN INVESTIGATION OF THE VALVULAR MECHANISM OF THE VENOUS RETURN FROM THE LOWER LIMBS.

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VARICOSE veins are generally admitted to be of congenital origin, although authorities differ as to whether the inherent factor is weakness of the vessel walls or defect in the valves. The observations that have been made to support the former theory depend mainly on histological changes which are difficult to interpret and on inconclusive experiments. The latter theory offers a more promising field for direct observation, and the experiments recorded below have been made to determine the presence or absence of valves in a series of young subjects assumed to include normal as well as varicose types.

Anatomy of the Veins.

Before considering these experiments a brief review of the accepted anatomy of the veins of the lower limb is essential. This is best considered under the following headings: (1) superficial system; (2) deep system; (3) perforating system. The superficial and deep systems need little further description beyond that given in text-books, but the anatomy of the perforating channels which connect the superficial and deep veins must be further detailed.

Perforating veins.—The main venous trunks of the limb form part of the deep system, and the superficial veins drain into them through the perforating channels. The perforating system, therefore, is of supreme importance to the superficial veins, and yet it is the part of the venous path which has received the least attention, especially of recent years. Certain of the perforating veins have acquired increased importance during evolution in proportion to the size of the superficial channels related to them. Thus the preservation of the terminations of the main internal and external saphenous veins is of some advantage to the return circulation, provided that they are adequately valved. If they are not, they may be ligated with advantage, as the remaining perforating veins serve to carry on the needs of the superficial

circulation. Briquet, more than a century ago, drew attention to the relation of the superficial varices in the leg to perforating veins.

"À l'endroit où la phlébectasie est la plus prononcée, il y a des communications très-larges avec les veines profondes, que sont larges à l'endroit d'où part la branche anastomotique; mais qu'ils reprennent leur calibre."

The perforating veins which have attracted most atention are the main ones of the *internal saphenous* in the leg and thigh (Fig. 1). These are direct and are found: (1) At the junction of the middle and superior thirds of the leg. Here a large important channel connects the internal saphenous system—usually the trunk—with the posterior tibial veins, running close to the tibia through the muscular attachment. (2) At the junction of the middle and distal thirds of the leg. This is usually smaller. It connects the internal saphenous and the posterior tibial. (3) Above the knee there is usually one anastomosing vein between the internal saphenous and the deep vein. This is small and is usually placed in the middle of the thigh.

The perforating veins of the *external saphenous* (Fig. 2) are indirect in the calf, as in this situation they unite with the trunks of the chief muscular veins (1) About the level of the junction of the upper and middle thirds of the leg a branch runs from the external saphenous vein through the deep fascia to end, as a rule, in the medial gastrocnemial vein. (2) A superficial loop of secondary size runs from the external saphenous vein over the lateral gastrocnemial belly to take part in the formation of the superficial external femoral vein. From this loop or from the main vein one or more perforating vessels run to the external gastrocnemial vein. (3) About the middle of the leg an indirect perforating vein from the trunk of the external saphenous traverses the soleus to join the soleal vein before terminating in the posterior tibial vein.

In the lower third of the leg one or more direct perforating twigs pass from the external saphenous, piercing the deep fascia to end in the posterior tibial vein.

COMPARISON OF VENOUS RETURN IN ARM AND LEG.

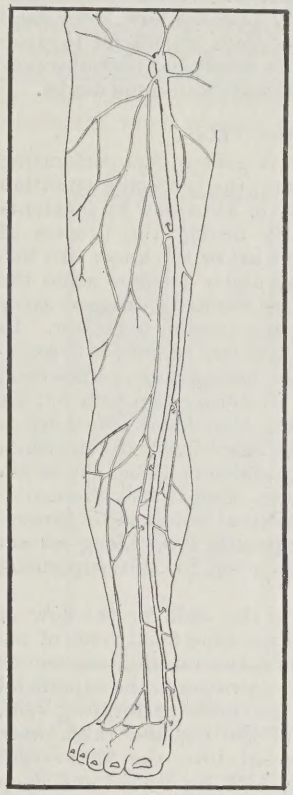
Briquet held that during contraction of muscles all the blood in the lower limb passes through the superficial veins.

"Toute passe dans les veines superficielles, ce qui démontre par l'influence des contractions musculaires sur le jet du sang, que dans la saignée on voit s'enlancer fort loin chez les gens robustes au moment où se fait la contraction."

This still appears to be a general impression, which is strengthened by analogy with the venous return in the upper limbs. It is common knowledge that in the arm increased flow along certain superficial veins is produced by contraction of the forearm muscles, use being made of alternating movements of clenching and unclenching the hand in collecting blood for transfusion from a donor. The superficial median and the deep median join and bifurcate immediately to form the cephalic and the median basilic veins. Blood is drawn usually from the median basilic. The advantage of the alternate clenching and relaxation is that the contraction of the muscles of the forearm tends to empty the deep veins, some of the blood reaching the superficial veins through the deep median. The needle or cannula should therefore be distally directed and is inserted downwards from a point sufficiently high up the median basilic to ensure that it does not obstruct, kink, or project distally to the deep median. Otherwise this vein does not convey its portion to the superficial veins, so that the value of the pumping action of the muscles is diminished. It might theoretically be possible that the same increase of flow of blood into the superficial veins of the leg occurs during the period of contraction of the calf muscles, the forces of pumping and suction from muscular contraction and relaxation playing an organised though complicated part in the blood return through alternate superficial and deep routes.

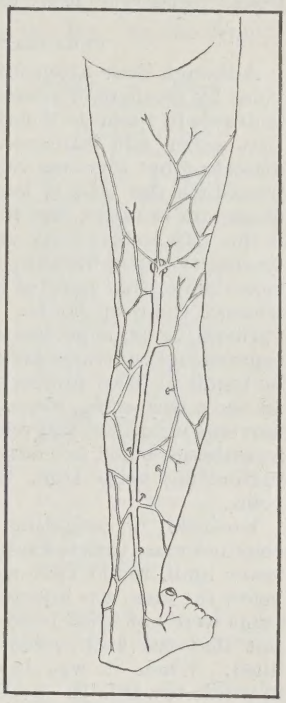
Comparison of the veins of the arm and leg reveals the following points of difference. In the arm venæ comites accompany each artery to the root of the limb, where a single efferent channel is formed in the axilla. The axillary vein drains the blood directly not only from the entire superficial surface of the arm but also from the shoulder girdle. In the lower limb a single main efferent channel (the popliteal vein) is formed at the knee. Blood from the superficial lateral aspect below this level reaches the efferent trunk here, while the internal superficial areas are drained into the vein at the root of the limb, together with the blood from the superficial veins of the thigh above the knee. Moreover, the greater part of the blood from the pelvic girdle and from the thigh returns via a different channel, the internal iliac. Blood in the median basilic is at so short a distance below the level of the heart that the aspiration of the chest during inspiration and the force of vis-a-tergo will together be more than adequate to account for the return. In the lower limb, where varicose veins occur, the difference of level is considerable and the mechanics of the venous return call for careful consideration. With such noteworthy differences it is possible, therefore, that the perforating veins have a different action in the upper and lower

FIG. 1.



The internal saphenous system. The majority of the perforating veins arise from the main trunk, but some from secondary branches.

FIG. 2.



The external saphenous system. General outline of the communications and perforating veins.

limbs. Indeed, Verneuil definitely stated as a result of anatomical observations that in the leg the perforating veins were normally valved to prevent flow from deep to superficial veins, but that in the upper limb flow from deep to superficial veins was normal. The majority of subsequent writers agree that whenever valves are found in the perforating veins of the leg they are arranged to prevent flow from deep to superficial veins (de l'Aulnoit, Le Dentu, Luschka) and my own observations are in accordance with this. Some investigators, however, have failed to confirm this finding. Klotz said that the majority of perforating veins were unvalved. When valves are present, in some cases they prevent flow from deep to superficial and in others from superficial to deep veins. It must therefore be concluded that observations by dissection leave the matter in some doubt.

PERFORATING VEINS.

Although little attention is paid to the perforating veins by teachers of anatomy, the surgeon's attention is drawn to them very early in his career by incidents that occur not infrequently during the process of dissecting out tortuous veins below the knee. In this procedure the vein is kept under tension while the dissection is made, and is occasionally dragged away if the vein wall is weak or the tension too great. In tracing the open bleeding ends left behind, it is sometimes found that most of the hæmorrhage comes from beneath the deep fascia. If, during an operation for varicose veins, a perforating vein below the knee is isolated and cut across before ligation, it will sometimes be found to bleed profusely and sometimes not at all. In the varicose leg, therefore, even in the absence of movement and the full relaxation obtained by general anæsthesia, blood not infrequently flows along certain perforating veins from the deep to the superficial veins.

Kosinski, investigating in the cadaver the flow of coloured mass injected into the superficial veins of the lower limb, found that when the internal saphenous below the knee was injected downwards the superficial veins were not filled below the main perforating vein, but that the deep veins of the leg and thigh were filled. When it was injected into the same vein upwards towards the knee, both superficial and deep veins were filled. The saphenous, therefore, not only empties itself through the main termination, but also through the perforating veins. This is true both in the normal and in the varicose limb. If a distended segment of a varicose or normal vein in the calf is isolated between two rubber bands and the patient asked to walk up and down the room, the full superficial vein segment is often emptied. The suction of muscle relaxation is the force presumably responsible for the emptying. It has recently been shown by Gaugier that if an opaque solution, such as lipiodol, is injected into a varicose vein, this substance can be seen under X rays to have reached the deep veins after a few movements of the calf, and using the same method McPheeters has made extended observations on venous flow.

It may, then, be regarded as established that under conditions of movement blood flows from the superficial to the deep veins in varicose and non-varicose veins, and that in varicose veins, therefore, flow may take place in either direction according to circumstances.

DISPOSITION OF VALVES IN PERFORATING SYSTEM OF LEG.

It still remains to be settled whether flow from deep to superficial veins ever occurs in the normal leg under suitable conditions of rest or movement. Direct observation under local anæsthesia seemed to offer a ready method of definitely settling the question. As, however, no opportunity presented itself of making this apparently crucial experiment on the living subject, preliminary observations were made by an indirect method in the post-mortem room.

Method of Investigation.

A series of experiments was carried out on the bodies of young subjects below the varicose age and of young adults without obvious varicose veins. After preliminary observation on the limitation of flow of coloured fluid injected intravenously at various sites opaque fluid was substituted and skiagrams were taken at various stages. These experiments eventually proved that a single, apparently conclusive, direct experiment in a supposedly normal subject might have given misleading information, and incidentally afforded an explanation of the divergence of opinions among anatomists.

The first experiment gave support to the possibility of flow from deep to superficial veins. In the body of a young unmarried woman, free from superficial varicosity, the posterior tibial, anterior tibial and the external and internal saphenous veins were dissected out at the level of the ankle joint, and a cannula inserted in each. The femoral vein above the termination of the saphenous was dissected out and opened. The deep and superficial veins were then syringed with water through the cannulas in all the opened veins at the level of the ankle until the flow from the femoral vein was clear. By this means any clots which might prevent the valves from functioning were removed. The internal saphenous at the knee and the superficial veins along the line that represents the surface marking of the anterior tibial veins were now exposed and opened. Coloured fluid of approximately the same consistency as blood was then syringed into the posterior tibial at a low pressure. This flowed not only out of the femoral vein, but also out of the internal saphenous and even from the small perforating veins between the anterior tibial and the superficial veins on the front of the leg. The same result was obtained when the anterior tibial was injected.

The results of this experiment suggested that all the veins of the leg were in free communication, like the channels of a plexus, and that the blood could pass freely backwards and forwards along perforating and deep communicating veins according to the dictates of muscular contraction or other forces. On consideration this seemed to indicate that either a very crude method of maintaining an orderly circulation was present, or else a very elaborate one the mechanism of which was not obvious. Repetition of the same experiment in a number of apparently normal young subjects showed that this free communication from deep to superficial veins was present in only a small proportion of cases, and the consideration of obscure mechanisms was therefore unnecessary.

Further investigations have shown that in the majority of subjects—a group considered to represent the normal type—the veins are valved in such a manner as to ensure absolute efficiency of the venous return from the lower limb. In the remainder incompetence of valves in definite regions gives rise to definite types of varicosity.

Twenty-eight more cases of young subjects without any clinical sign of varicose veins were investigated in this way. In 25 of these, coloured fluid injected into the anterior and posterior tibial veins did not reach the superficial veins even when the pressure of the injection was raised considerably after ligation of the femoral below the point of entry of the saphenous vein. (See normal or congenitally non-varicose type, Figs. 4 and 5.)

VALVULAR DEFICIENCY IN PERFORATING SYSTEM.

1. Three cases out of 28 were distinguished from the rest by the incompetence of the perforating system in connexion with the internal saphenous

system. They will be referred to as the *congenitally varicose internal saphenous type* (Fig. 6). These three cases were investigated by substitution of an opaque for the coloured fluid, the injection being watched under the screen and the results recorded by films from time to time. In this type there is leakage from the deep main veins along certain perforating veins of the internal saphenous, but all other branches of the deep veins are adequately valved at their terminations.

2. Of the remaining 25 cases ten were investigated by X rays in the same way. In eight of these fluid injected remained confined to the main venous channels, and there was no escape into any tributary, no matter how high the pressure of the injection was raised after ligation of the femoral vein. (See Figs. 4 and 5). In two cases out of the ten, reflux occurred into muscular branches of the calf (Figs. 7 and 8). The trunks of these muscular veins, as has been noted above, receive the perforating veins of the external saphenous system. There is still some protection of this superficial system from reflux from deep veins, as in one of the cases the injection fluid did not reach the system whatever pressure was reached in the main veins, and in the other case the fluid slowly entered it when the pressure was raised to a very high level. The external saphenous has, however, only a small proportion of its normal protection, and the group in which there is muscular vein incompetence may also be regarded as one disposed to varicosity of the external saphenous system. It will be referred to as the *congenitally varicose external saphenous, or calf-muscle type* (Fig. 7).

After eliminating these two groups the majority of the remainder will represent the normal non-varicose type.

DISPOSITION OF VALVES IN SUPERFICIAL AND DEEP VEINS.

Before defining the normal non-varicose type it is necessary to note how the main superficial and deep veins are generally valved, and to see if any departure from normal likely to give rise to disability can be readily demonstrated.

The following observations by various writers will serve to summarise our knowledge of the disposition of valves in these veins.

Superficial system.—Valves in the great saphenous vein were described in his work, "De venarum ostiolis," by Fabricius, who noted, among other laws governing the disposition of parietal valves, that they are found almost constantly below the entrance of a tributary. According to Bardeleben the principle on which the distribution of valves in superficial veins depends is as follows. Fundamentally a vein consists of a number of divisions segmentally arranged, each division being formed by a piece of cylindrical wall, a conical widening (sinus), a tributary vein entry, and a bicuspid valve. The general rule according to this author is that "distal from every tributary lies a valve, proximal from every valve is a tributary entry." Exceptions are only apparent, and due to disappearance of valve or tributary. Kosinski has shown that the superficial vein is valved below its junction with important perforating veins. Klotz found no valves in cross-anastomoses between veins of equal size; between veins of unequal size there are valves so directed that the blood flows from smaller into larger.

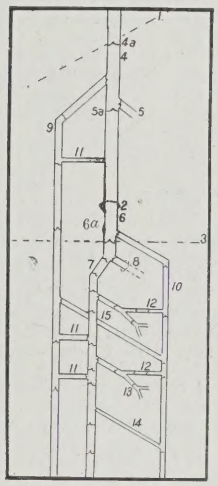
Deep system.—Sappey ("Traité d'Anatomie," 1850–64) stated:—

"Les valvules sont plus nombreuses dans les parties du système veineux où le sang coule contrairement aux lois de la pesanteur, plus dans les membres inférieures que dans les supérieures, plus dans les veines de petit calibre que dans les veines volumineuses, plus enfin dans les veines des muscles que dans celles de tout autre organe. Les veinules intra-musculaires en sont en quelque sorte criblées."

"Les valvules seraient plus abondamment répandues dans les veines superficielles que dans les profondes, suivant Béclard et Meckel. Blandin a refuté cette erreur en montrant que les veines intermusculaires dont les parois sont plus minces et plus souvent déprimées par le jeu des muscles, possèdent, ainsi que la physiologie, pouvait le faire prévoir, plus de valvules que les veines sous-cutanées."

H. de l'Aulnoit pointed out that a valve dominates the venous system of the lower limb (femoral valve), and said that this is the most constant of all. This valve is not, however, so constant as the one below the termination of the deep femoral vein. He showed that the deep veins possess more valves than the superficial and that the muscular veins surpass the two. There are less valves in the deep trunks of the thigh than in the main venæ comites in the leg. In the femoral

FIG. 3.



Scheme of normal valvular mechanism of the lower limb. 1. Poupart's ligament. 2. Adductor ring. 3. Level of knee-joint. 4. Femoral vein. 4a. Femoral valve. 5. Deep femoral vein. 5a. Deep femoral valve. 6. Popliteal vein. 6a. Popliteal valve. 7. Posterior tibial vein. 8. Anterior tibial vein. 9. Internal saphenous vein. 10. External saphenous vein. 11. Perforating veins—internal saphenous. 12. Indirect perforating veins — external saphenous. 13. Muscular veins. 14. Direct perforating veins — external saphenous. 15. Superficial cross-communication.

he found three valves, in the popliteal one, but as many as 19 in the posterior tibial, and 11 in the anterior tibial veins.

The following investigations bearing on valvular distribution were made in a number of cases. The results recorded indicate the normal arrangement of valves in the superficial and deep veins (Fig. 3). The experiments described have, however, been selected mainly because they are simple of application as post-mortem room tests of incompetence of superficial and deep veins.

INTERNAL SAPHENOUS SYSTEM.

EXPT. 1.—Injection of the internal saphenous downwards from a point immediately below its termination forces the first parietal valve when the pressure is raised considerably. The next valve or two give way more readily, and then the fluid slowly begins to enter the perforating vein of the thigh and to fill the deep veins to the same extent as in Expt. 8. It does not descend the internal saphenous until the parietal valve immediately below the point of origin of this perforating vein is ruptured by the raised pressure. Conclusion: The parietal valves in the internal saphenous are usually weak, but occasionally the penultimate valve is comparatively strong. The dilatation of the terminal segment of the internal saphenous vein is probably caused by the pressure of the reflux through the saphenous termination above this comparatively strong valve. There is a valve just below the perforating branch in the thigh. This perforating branch is usually small and somewhat elongated.

EXPT. 2.—Fluid injected into the internal saphenous downwards from a point below the knee fills the saphenous vein as far as the perforating channel at the junction of the upper and middle thirds of the leg, through which it reaches the deep veins. It does not descend the internal saphenous beyond this point, but it occasionally reaches the external

saphenous system via small communicating branches. The course in the deep veins is almost entirely upwards, that in a downward direction being usually very limited by valves. Conclusion: There is a valve in the internal saphenous just below the perforating vein in the calf. Blood may sometimes flow from the internal saphenous to the external saphenous along superficial communicating branches.

EXPT. 3.—Fluid injected upwards into the internal saphenous at a point below the level of this perforating vein fills the internal saphenous and may occasionally reach the external saphenous by some small superficial cross-connexions; also, through the perforating vein, it enters the deep veins, which it fills to the same level as in 2. Conclusion: Blood in the internal saphenous may flow along the main channel to the termination, through the perforating veins into the deep system, or may occasionally reach the external saphenous. Blood reaching the deep veins is directed up the limbs and cannot pass downward.

The conclusions from 2 and 3 agree with the results given by Kosinski, but the limited extent of the flow down the leg along the deep veins in the normal must be emphasised.

EXTERNAL SAPHENOUS SYSTEM.

EXPT. 4.—Fluid injected upwards into the main external saphenous vein runs along the main channel to its termination in the popliteal vein, enters the perforating veins of this system, and also travels along the veins connecting it with the internal saphenous system. This spread is so very diverse that its demonstration by X ray is impossible.

EXPT. 5.—Fluid injected into the external saphenous downwards from a point short of its termination is soon obstructed by valves that resist more pressure than those of the internal saphenous.

MAIN DEEP VEINS.

EXPT. 6.—Fluid injected into the external iliac vein is most often held up by the femoral valve, which is placed in a well-protected position about the level of Poupart's ligament. This is often the first competent valve between the heart and the limb veins. The external iliac is frequently provided with one valve, and the common iliac occasionally has one, but in a large proportion of the cases in which these valves exist they are incompetent. Most observers deny the existence of a parietal valve between the heart and the common iliac veins. The femoral valve is very constant in position, but is absent in a small percentage of subjects. Conclusion: The femoral valve protects the limb against back-pressure from the abdomen.

EXPT. 7.—Fluid injected into the femoral vein downwards from just below Poupart's ligament will not pass into the internal saphenous, but continues down the femoral to a valve just below the level of the entrance of the deep femoral vein. It will not enter this. Conclusion: Terminal valves guard the entrances of the internal saphenous and of the deep femoral into the femoral vein. A parietal valve (deep femoral valve) is present in the femoral vein just below the entrance of the deep femoral. This is a very constant valve.

EXPT. 8.—Fluid injected into the femoral below the level of the entrance of the deep femoral most often reaches a point opposite the level of the knee-joint. This point is just distal to the entrance of the external saphenous, but fluid does not enter this vein, nor does it reach the internal saphenous system via the perforating vein in the thigh. Occasionally the fluid is stopped by a second valve near the junction of the femoral and the popliteal veins. Conclusion: A terminal valve is present at the mouth of the external saphenous and of the perforating vein in the thigh. A parietal valve (popliteal valve) is present in the popliteal vein immediately distal to the termination of the external saphenous.

EXPT. 9.—Fluid injected into the popliteal vein downwards from below the level of the knee will not enter the anterior and posterior tibial veins. Conclusion: The beginning of the popliteal vein is valved.

EXPT. 10.—Fluid injected from the superficial aspect directly into the perforating branch at the junction of the middle and upper thirds of the leg reaches the deep veins, where its flow is almost entirely upward, that in a downward direction being normally very limited. Occasionally there is at about this level a communicating branch between the anterior and posterior venæ comites, in which case both main channels are filled above but the flow in a downward direction is prevented. Conclusion: There are valves in the deep veins just below the level of the deep connecting vein. There is usually a valve in the deep vein just below the point of entrance of the perforating vein.

EXPT. 11.—Fluid injected into the direct perforating veins lower down the leg gives similar information.

N.B.—All the valves in the deep veins, including those of the terminations of perforating and muscular veins, withstand high degrees of pressure.

VALVULAR DEFICIENCY IN SUPERFICIAL SYSTEM.

Apart from the disability arising from incompetence of the terminal valves and those of the perforating veins, no striking departure from the normal arrangement of valves has been noted in the superficial system sufficient to justify a subdivision of "superficial varicose type."

VALVULAR DEFICIENCY IN DEEP SYSTEM.

Tests for efficiency of valves in deep veins were carried out in six cases, including the two of the varicose external saphenous type. In one of the six which was otherwise normal, the femoral valve was missing on one side. All the rest showed normal valving in this situation and elsewhere, except one of the cases of the varicose external saphenous type. In this case fluid injected into a perforating vein above the middle of the calf passed downwards in the posterior tibial venæ comites to the same level as that injected into a perforating vein lower down (see Fig. 8). Apparently these veins were incompetently valved over a distance of at least two to three inches. The fluid injected into the upper perforating vein was only prevented from escaping back along the lower perforating vein by the competent valve guarding this channel. The case may be recorded, therefore, as an example of the congenitally varicose deep vein type. The absence of the femoral valve is only regarded as a disability if the terminal saphenous valve is incompetent.

When the above groups have been separated off, there remain those cases in which the main channels themselves are adequately valved throughout and there is no leakage from them, either into the perforating or into the muscular veins. These constitute the normal or congenitally non-varicose type.

We find, then, in apparently normal young subjects without any sign of varicosity, the following groups: (1) normal or congenitally non-varicose type; (2) congenitally varicose internal saphenous type; (3) congenitally varicose external saphenous type (muscular varicosis); (4) congenitally varicose main deep veins type. Some subjects may possess the defects of more than one of these varicose types.

NORMAL OR CONGENITALLY NON-VARICOSE TYPE.

In about 70 per cent. of young subjects the perforating veins do not transmit rises of pressure in the deep veins to the superficial veins. In this type injected fluid remains confined to the main deep veins at whatever pressure the injection is made. High pressures were used after ligation of the femoral vein below the termination of the internal saphenous. If the pressure is raised excessively, the deep veins will burst before the valves of the perforating veins can be forced. The picture of the result of injection of the anterior and posterior tibials at high pressure is shown in Figs. 4 and 5. Here it will be noticed that, if the one vein is injected, there is no back flow into the other. This result shows, therefore, the presence of valvular protection near the termination of the anterior and posterior tibial venæ comites. There is frequently a connecting vein in the middle of the calf, in which case the picture given by injection is the same as that shown in Fig. 6, except that there is no escape to the superficial system via the perforating veins. In such cases, when the injection is made into either of the anterior or posterior tibial veins, there is no flow down the other below the connecting branch. Again the inference is the presence of valvular protection below this junction. A second communicating vein occasionally connects the two in

the lower third. The X ray appearance also suggests that the valves of the deep veins are very close-set.

The main points of the valvular mechanism in a fully protected deep venous system may be summarised as follows: (1) terminations of all muscular and perforating veins are valved; (2) terminations of the anterior and posterior tibial venæ comites are valved; (3) there are valves in the venæ comites just below the connecting veins; (4) the valves of the venæ comites are close-set; (5) the valves in the muscular and perforating, are valved to prevent back-flow. The act of relaxation from contraction produces a negative pressure in the deep veins corresponding to the muscles, and blood is drawn from the capillaries of the deep circulation and from the superficial veins via the perforating channels and driven up the deep veins by the next contraction. During alternate contraction and relaxation of the calf muscles, therefore, if normal valves are present in the deep and in the perforating veins, the deep circulation relieves the superficial system. In ordinary active movements of the leg with unrestrained respiratory actions, the return of blood from the superficial veins is effected by the suction of muscular relaxation and of respiration rather than by the pressure of the vis-a-tergo. The pressure in normal superficial veins, except in the standing inactive position, is therefore never related to the hydrostatic pressure represented by the height of the column of blood above it. When at rest in the erect position the internal saphenous route is the most direct one for the return of blood from the superficial system, the vis-a-tergo and the abdominothoracic suction through the femoral segment being the only forces at work. This route, which is peculiar to man, affords therefore a slight advantage if the terminal and parietal internal saphenous valves are competent.

FIGS. 4 5 6.

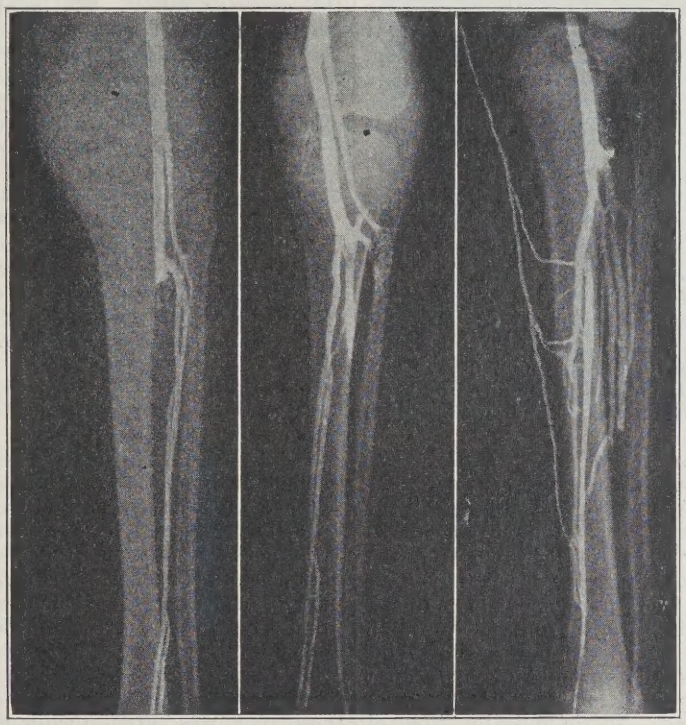


FIG. 4.—The normal or non-varicose type. Injection of anterior tibial vein with high pressure, showing competence of all veins entering the deep system. (Antero-posterior view.)

FIG. 5.—The normal or non-varicose type. Injection of posterior tibial vein with high pressure, showing competence of all veins entering the deep system. (Antero-posterior view.)

FIG. 6.—Hereditary tendency to varicosis. Internal saphenous type. Injection of posterior tibial vein with low pressure, showing leak along direct perforating veins into the internal saphenous system. The communication revealed between the anterior and posterior tibial veins is common in both normal and varicose types. (Antero-posterior view.)

venæ comites, the terminal valves of the perforating veins and those of the muscular veins are normally capable of withstanding a pressure sufficient to burst the walls of these veins.

The result of muscular contraction of the calf, if the main deep veins are adequately valved, is merely to squirt blood up the deep veins towards the heart. All other routes are protected by valves. At the level of the knee the main deep veins form a single channel which is continued up the thigh through spaces more or less directly compressed by muscular contraction. Below the knee the deep veins are arranged as venæ comites and receive the perforating channels from both internal and external saphenous veins. The venæ comites are thinner-walled, more closely valved and subjected to more direct muscular pressure. The muscular veins themselves, which have even thinner walls and closer valves, are affected most of all by muscular contraction. This increasingly close approximation of valves as the walls become thinner and the muscular pressure more direct counteracts any tendency to back-flow, and prevents waste of propulsive energy during muscular contraction.

The more distal veins are thus completely emptied by pressure of surrounding muscles into the channels above the knee, which are less directly compressed. This relation of the muscles to the veins in the leg and thigh ensures the correct adjustment of pressure and is suitable for the return of blood from the leg through the main veins of the contracted thigh. It is suggested also that contraction in the muscle starts in the fibres nearest the distal insertion, and that this arrangement also favours the upward drive of blood. Both above and below the knee all entering tributaries,

CONGENITALLY VARICOSE INTERNAL SAPHENOUS TYPE.

In three out of the 28 young subjects the perforating veins in connexion with the internal saphenous system were incompetently valved, and would not protect the superficial veins in the leg against the rapid rises of intravenous pressure that occur in the deep veins during muscular contraction. In these cases the fluid injected into one of the posterior tibial veins reaches this superficial system along the perforating veins with a comparatively small pressure. In the case shown in Fig. 6 the femoral vein is not tied, so that there is little intravenous pressure; yet the injection has reached the internal saphenous vein via the two main perforating veins in the leg.

In this type, although the deep veins and the muscular veins are adequately valved, the perforating

veins of the internal saphenous readily permit flow from deep to superficial veins. When these veins are inadequately valved the result of muscular contraction is to squirt blood through the perforating veins into the unsupported superficial veins as well as up the deep system towards the heart. In so far as the perforating veins pass through muscle they are well supported at the moment when the pressure inside them is raised, so that the effect of the primary valvular defect is only shown in superficial veins when compensation is broken down.

Inquiries into the family history of the three cases of the first group showed that in two of the three varicosis was an hereditary condition on either the paternal or the maternal side. In the third case the history of one side of the family was unknown, but the maternal side showed no hereditary tendency. These experiments were made on the cadaver, and in the earlier ones, before the importance of the hereditary factor was appreciated, the records kept in normal cases were insufficient to allow the cases to be traced and further inquiries to be made for family tendency. The question of a negative family history is, however, an important one, and detailed statistics from a further series should yield interesting and profitable results.

Two of these cases were under 12 years of age—i.e., below the usual age of the onset of varicosis. The third was 18 years of age. In all three cases of this group the upper perforating branch of the calf was incompetent and in two of them the lower one was also. In one of them the internal saphenous terminal valve itself was slightly incompetent.

The valve of a perforating vein, though not absolutely terminal, is within the deep fascia. The vein at this point is protected from stretching by the support of the deep structures. I have considered the question of valvular protection of the perforating vein within and without the deep fascia but have found no evidence that this arrangement is the basis of the divergence of this type from the normal. Macroscopical examination of the perforating veins on dissection showed usually no trace of valves, but in one instance the presence of a rudimentary or atrophied valve was noted. Microscopical sections of the superficial veins in the neighbourhood of the perforating veins could in no way be distinguished from sections from the non-varicose types at the same level. The valvular incompetence is not secondary to weakness of the wall and may therefore be regarded as the primary defect.

This type may be subdivided into three groups :—

(*a*) *Terminal valve of saphenous alone incompetent.*—No case of this group was present in this series, but it is not rare clinically as the main defect. Here the parietal saphenous valves are exposed to the pressure of the superior reflux from the terminal segment of the femoral vein. In a small percentage of cases the femoral valve is absent and there is a true abdominal reflux into the saphenous. When the whole parietal system of the internal saphenous has given way before the pressure, this reflux is demonstrable as Trendelenberg's sign. In the upright position the veins of the leg are exposed continuously to the pressure of the column above, and a feeling of weight in the legs is then a constant symptom. As the valves of the other perforating veins are competent, there is no inferior or muscular reflux. Any blood removed from the veins by the suction of calf relaxation is, however, replaced from above, so that walking does not relieve the pressure.

(*b*) *Terminal valve competent but perforating veins of the calf incompetent.*—In these cases the superficial veins in this situation are exposed to the powerful inferior or muscular reflux. The amount squirted through is limited, and the effect of this reflux depends on the state of fullness of the veins. Its effect is therefore greatest in those people whose employments involve standing for long periods. During exercise there is a reflux corresponding to muscular contraction, but the superficial veins are partially emptied by the suction of relaxation from contraction. These patients have not the same feeling of weight in the leg as those of group (*a*), and walking relieves the pressure.

(*c*) *Both terminal valve and perforating veins of the leg incompetent.*—Where the whole parietal system has been broken down the vein is constantly filled by the superior reflux. The squirt of muscular contraction therefore acts on a continuously distended vein. The amount withdrawn by relaxation is replaced by descent of blood from above. These cases have a feeling of weight due to the superior reflux, which is at once relieved if the saphenous trunk is either ligated or obliterated.

CONGENITALLY VARICOSE EXTERNAL SAPHENOUS TYPE (CALF-MUSCLE VARICOSIS).

In two out of the ten young subjects certain muscular veins of the calf were not competently valved. These veins, as has been noted, may also be regarded as indirect perforating veins associated with the external saphenous system. The main entrance of the external saphenous vein was competent in the whole series. Here fluid injected into the deep veins did not reach the superficial veins, but flowed readily into certain muscular veins of the calf, and macroscopical examination after dissection of the affected veins showed that the reflux resulted from complete absence of valvular protection. Any or all of the muscular veins in this situation may show this incompetence, but when those affected belong to the gastrocnemial or soleal group (Fig. 7) the corresponding part of the external saphenous system has a very limited barrier of protection from the muscular drive, and superficial varicosis usually develops.

This group is of considerable interest in relation to Verneuil's findings that the intermuscular portion of these veins was varicose while the termination was of normal size. As a result of his observations on varicose subjects he concluded that varicosis commences in the deep veins, particularly those of the calf of the leg. It is also found in the peroneal vein. He attributed the condition to obstruction at the aponeurotic openings through which veins passed, especially the soleal veins. Some of these veins which Verneuil described are undoubtedly connected with the indirect perforating veins of the external saphenous system.

The above experiments place the primary cause of the varicosis commencing in this situation, not with the aponeurotic covering, but in the terminal and parietal valves of the common channel of the indirect perforating and muscular veins (Fig. 3). They do not, however, exclude the possibility of localised parietal valve incompetence apart from terminal valve incompetence in these muscular veins. The two cases in this group were aged 17 and 19 years and were within the varicose age. In both cases varicosis existed in one or other of the parents. In one, deep vein incompetence over a certain length of main vein was also present. In this type, although the direct perforating veins of the internal saphenous and most of the muscular veins of the limb are competent, certain muscular veins of the calf (indirect perforating veins of the external saphenous) are incompetent. An

incompetent indirect perforating vein is usually associated with an incompetence of the muscular vein, and an aching pain in the calf accompanies the condition.

CONGENITALLY VARICOSE DEEP-VEIN TYPE.

It is not possible to give any idea of the frequency of this type, as only six cases were examined and two of these were specially selected as having muscular varicosis. The femoral valve, which, situated beneath Poupart's ligament, dominates the whole venous system of the lower limb, is not infrequently absent. The effect of its absence on an incompetent internal saphenous system has been noted. The effect on the deep circulation is not marked. The deep veins may also be inadequately valved below the knee. In one of these cases showing muscular varicosis, the close valving noted in the posterior tibial venæ comites was interrupted over a considerable area (Fig. 8). Macroscopical examination of the channels after dissection showed almost complete absence of valves in and immediately above the part which the opaque injection method showed to be incompetent. Varicosis of the posterior tibial was recorded by Verneuil, but he specially noted that he never met with a dilatation of the anterior tibial vein. When the deep veins are closely valved, muscular contraction must result in an orderly flow along them, but valvular incompetence throughout a considerable length of the deep vein is likely to progress to serious varicosity, for a long column of blood may be flung back along the distensile vein against the flaps of the first competent valve of the main channel or of the perforating vein. More strain is imposed on these valves, and if the valve of the perforating vein gives way, the rapid development of severe superficial varicosis is likely to follow. Moreover, it is impossible to eliminate the varicose segment from the circulation, and it is difficult to evolve a rational and efficient treatment.

Conclusions.

Though the series is not large enough to be conclusive, these experiments suggest that the inadequacy or absence of the valves—more often those of the perforating but occasionally those of the deep veins, particularly the posterior tibials—is a factor commonly underlying the hereditary tendency to varicosis. This valvular defect is apparently the primary lesion. There is no evidence of weakness of the wall and certainly no sign of dilatation of superficial veins.

The perforating veins include all the channels through which the superficial system drains into the deep circulation. Among them are the terminal portions of the internal and external saphenous vein, which are merely specially developed direct perforating communications. The direct perforating veins of the internal saphenous and the indirect perforating veins of the external saphenous system are all seen to be often affected.

The effect on the superficial system of this congenital incompetence of the perforating veins is not usually apparent until after adolescence. During the period of growth compensation is adequate. This is probably accounted for by the following facts. Prior to adolescence occupations involving prolonged standing are few, the muscles themselves are constantly active and their tone is usually good, the leak back through small veins supported by these muscles is slight, the elasticity of the superficial vein wall is considerable, the diameter of the vein is smaller, and finally, owing to the smaller stature, the hydrostatic pressure in the superficial veins is less. With regard to the indirect perforating veins of the external saphenous: although the muscular veins are incompetently valved at their terminations and in the last part of their course, there is still some valvular protection for the superficial veins, and superficial varices do not arise until this is broken down. If varicosis of the deep veins over a considerable area is present, not only is the condition likely to be more extensive and rapidly progressive, but cure is more difficult.

FIGS. 7. 8.

FIG. 7.—Tendency to varicosis. Calf muscle and external saphenous type. Posterior tibial veins injected with high pressure. Anterior tibial veins filled through communicating veins. No leak into internal saphenous system. Gross incompetence of calf-muscle veins into which drain the indirect perforating veins of the external saphenous. (Lateral view.)

FIG. 8.—Tendency to varicosis. (*a*) Calf muscle and external saphenous type. The veins of the calf muscle are filled from the main deep veins. (*b*) Main deep-vein type. Two perforating veins of internal saphenous injected with high pressure; injection into the upper perforating vein descended the deep veins to the level of the lower; further descent was limited by normal valvular arrangement. Injection into lower cannula did not alter the picture. (Lateral view.)

EXCITING FACTORS.

Given the inherited valvular weakness, the following exciting factors are of importance in connexion with the onset of varicose veins:—

1. Lack of tone or development of supporting muscles. The varicose condition very often comes on during a period of overwork or of recovery from illness.

2. Employments involving standing for long periods of time. The upright position tends to keep the superficial and deep veins full, so that with any contractions of the muscles a reflux through the perforating channels further distends the superficial system. Tight elastic garters may increase the fullness of the veins while in the standing position.

3. Any condition tending to produce weakening of the vein walls. A common example is the onset of varicose veins in pregnancy. This has been attributed to pelvic pressure but, as it comes on before the uterus is bulky enough to cause pressure, some authors consider it to be due to toxins, possibly of placental origin, circulating in the blood. It only affects women of the varicose type. The cases demonstrated above show for the most part complete incompetence of valves. It is probable, however, that many individuals suffer from an incompetence less complete than these subjects. In some the degree is marked

and the toxic effect of a single pregnancy produces a lesion from which the vein never recovers. In others the valves are less incompetent and the degree of recovery after the toxic effect has passed off is sufficient to allow the valves again to act competently. In some of these the valves may finally fail with the circulatory changes that occur at the menopause. Possibly other toxic or trophic conditions produce the same effect as pregnancy, but usually then the exciting cause is not intermittent and varicosis develops progressively. The endocrine disorders which are considered to be of importance in this connexion by Continental writers are regarded rather lightly in this country.

4. Any cause of obstruction to the venous return, such as pelvic tumour, thrombosis of the iliac or femoral vein. The effect of obstruction at openings in aponeurosis cannot be regarded as proved.

5. Any cause of abdominal straining—excessive efforts during defæcation or micturition, caused by constipation, urethral stricture, enlarged prostate.

6. The existence of a heart lesion resulting in venous back-pressure has the same effect as the upright position on full veins.

These exciting factors must all be considered in connexion with the treatment. In addition to blocking a superficial or perforating vein which is hopelessly impaired, it is necessary to keep up the muscular tone by massage and exercise, to avoid long standing, to remove where possible any intermittent or constant cause of back-pressure along the veins, and also to treat any toxic condition likely to impair other comparatively adequate perforating veins.

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THE TREATMENT OF ERYSIPELAS WITH VACCINES.

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THE methods at present available for the treatment of erysipelas may be broadly classified as local applications, internal administration of drugs, and immunisation.

It would serve no useful purpose to enumerate the various medicaments employed as external applications or for internal administration. Most observers with an extensive experience of the disease will agree with Ker [1] "that all the systems of treatment advocated frequently fail to check the advance of the dermatitis, so frequently, indeed, as to justify us doubting whether they exert any favourable influence at all." Roger [2] is not impressed with the specific value of the various antiseptics applied externally, or drugs administered per os.

As pointed out by Meara [3] it is not easy to assess the value of any form of local treatment in a self-limited disease like facial erysipelas, the duration of which is so uncertain. It must be remembered that the natural tendency of the disease is towards cure, and we may reasonably assume that the patient gets better in spite of the remedies employed rather than because of them. A study of the literature from the therapeutic angle makes one wonder whether these points in the natural history of the disease are sufficiently appreciated.

Serum treatment has apparently been successful in the hands of some clinicians, whilst others have not been favourably impressed with the results obtained. Polyvalent antistreptococcal serum gave such disappointing results that its use in this hospital was discontinued several years ago. Recent research in the group of hæmolytic streptococci has led to the production of alleged specific antitoxic sera against scarlet fever, erysipelas, and puerperal infection. The specific scarlet fever antitoxic serum is of proven value. Conflicting reports about the efficacy of the respective antitoxic sera against erysipelas and puerperal infection are met with. These sera have been freely administered to patients in the City Hospital during the past three years. The results obtained will be published at an early date.

In that widely varying results have been reported by different observers, vaccine treatment is no exception to the other remedies employed in the treatment of infection with the *Streptococcus erysipelatis*. Whilst Sill,[4] Fischer,[5] Takaki,[6] Russell,[7] and Boidin and Tierny [8] have apparently obtained satisfactory results in isolated or small groups of cases, Erdman,[9] from his experience of vaccine therapy in 95 cases, concludes that this method of treatment is valueless. Vaccine treatment has also proved a failure in the hands of Boidin and Delafontaine.[10] Ker [11] wrote in 1920: "It is certainly desirable that more work on the therapeutic use of vaccines should be undertaken—a very long series of cases, adequately controlled, will be necessary to establish their efficacy in a disease so variable in its duration and severity."

In this paper I have collected observations on 570 cases of erysipelas, 470 of which were acute attacks, whilst 100 were of a subacute afebrile type.

Method of Investigation.

On admission to hospital, the cases were primarily classified into two groups. One group consisted of typical acute attacks characterised by marked constitutional symptoms. Subacute attacks, in which the systemic disturbance was negligible, formed the second group. To alternate patients in the acute group vaccines were administered, the others acting as controls. We thus have records of 235 acute cases treated with vaccines, and an equal number of patients suffering from acute attacks who received purely symptomatic treatment.

TABLE I.—*Original Site of Infection.*

Series.		Face, ears, or scalp.	Trunk	Genitals.	Arms.	Legs.	Tot
Vaccine		207	10	4	0	14	23
Non-vaccine	Acute ..	203	6	4	6	16	23
	Subacute	94	0	0	1	5	10
Totals		504	16	8	7	35	57

The original site of the inflammatory process in the various groups of cases is shown in Table I.

As might be expected facial cases preponderate, amounting to 88 per cent. of the vaccine-treated series and 86 per cent. of the control group.

Treatment.

The therapeutic measures employed for the relief of delirium, insomnia, and high temperature were the same in all cases. The following local applications were tried: (*a*) lint kept constantly moist with a cold saturated aqueous solution of magnesium sulphate to which 10 to 20 per cent. of glycerin had been added; (*b*) collosol iodine, and (*c*) a 5 per cent. aqueous solution of brilliant green (as recommended by Adams [12]). The latter two preparations were painted on and beyond the inflamed area morning and evening. The solution applied to the inflamed area in various groups of cases is shown in Table II.

TABLE II.—*Local Applications.*

—	Acute series.		Sub-acute series.	Total.
	Vaccine cases.	Non-vaccine cases.		
Magnesium sulphate ..	156	161	80	397
Collosol iodine ..	51	44	0	95
Brilliant green ..	28	30	20	78
Totals	235	235	100	570

It will be seen from Table II. that suitable control cases were obtained in the acute non-vaccine series for each group in the vaccine series. We thus hoped to assess, and eliminate if possible, any variation that might arise from the alteration of the local treatment.

VACCINES.

The vaccines administered may be broadly grouped into "stock" and "hospital." The former group included commercial preparations containing *S. erysipelatis*, or *S. pyogenes*, polyvalent streptococcal vaccine, and a combined streptococcal and staphylococcal vaccine. The "hospital" vaccine was prepared from strains of *S. erysipelatis* isolated from the inflammatory area in six acute cases of the disease. An autogenous vaccine was administered to five patients. The relatively brief duration of the disease in the vast majority of patients proves a stumbling-block to the extensive employment of autogenous preparations.

Whilst the vaccine was injected subcutaneously in all cases, the total dosage and the interval between injections varied considerably. One hundred and thirty-six patients received a course of six injections administered either daily, or at two-, three-, or four-day intervals. Fifty cases received either four or five injections of vaccine. To the remaining 49 individuals from one to a maximum of ten doses were administered. The actual number of cocci injected varied according to the severity of the infection and the age of the patient, ranging from a primary dose of 250,000 organisms in an infant 3 weeks old to a maximum primary injection of 10 million streptococci. The average course for an adult ranged from an initial dose of 5 million streptococci to a final injection of 200 million organisms. The usual interval between injections was three days. A course of daily injections ranging from 1 to 20 million cocci was administered to a small group of sharp cases. The dosage of mixed vaccine rose from an initial injection of 10 million streptococci combined with 500 million staphylococci to a maximum dose of 100 million streptococci plus 5000 million staphylococci.

Result of Vaccine Treatment.

In endeavouring to estimate the therapeutic value of the vaccine employed, attention was paid to (*a*) the duration of pyrexia, (*b*) the extent of spread of the inflammatory lesion, (*c*) the incidence of complications, (*d*) the occurrence of relapses and second attacks, and (*e*) the mortality-rate. The following criteria were adopted:—

Day of Crisis.—The day on which the morning or evening temperature was first normal and did not subsequently rise, except when due to an obvious complication, was considered as the day of crisis.

Day of Cessation of Activity.—Day on which the local inflammation had entirely subsided.

Wandering Type.—Implies invasion of neck or trunk from a primary focus on either face or limb, or of limb or face from an original focus on the trunk.

The age and sex of the patient, and the day of disease on which the patient was first admitted to hospital, are of importance, when the value of any method of treatment for erysipelas has to be assessed. Whilst the gravity of erysipelas at the extremes of life is common knowledge, the fact that the death-rate tends to be higher in males at all ages than in females is perhaps not so widely appreciated. The age and sex of vaccine-treated and control cases are noted in Table III.

TABLE III.—*Age and Sex of Acute Cases.*

Series.	Sex.	Under 1 yr.	Age-period in years.										Totals.
			1–4	5–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	
Vaccine	M	6	8	5	11	14	15	23	16	10	3	1	112 } 235
	F	6	4	3	18	17	15	24	18	14	4	0	123 }
Non-vaccine	M	7	6	1	6	4	13	22	18	13	4	0	94 } 235
	F	3	8	2	26	28	16	22	21	10	4	1	141 }
Totals ..		22	26	11	61	63	59	91	73	47	15	2	470

The number of patients under 5 years and above 60 years of age was 56 in both groups. Unfortunately, the sex incidence is not so strictly comparable. Males form 47·7 per cent. of the vaccine-treated group as against 40 per cent. of the control group.

Table IV. gives us information regarding the day of disease on admission to hospital in the two groups of cases.

TABLE IV.—*Day of Disease on Admission to Hospital.*

Series.	Day of disease.													Totals.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Vaccine. ..	15	55	64	35	38	11	3	8	1	1	3	0	1	0	235
Non-vaccine..	13	61	57	50	24	11	8	6	0	0	2	2	0	1	235
Totals ..	28	116	121	85	62	22	11	14	1	1	5	2	1	1	470

The average duration of illness prior to admission to hospital in the 235 cases treated with vaccine was 2·67 days. In the 235 non-vaccine treated (control) cases it was 2·64 days.

The two groups are strictly comparable as far as age distribution and duration of disease prior to hospital treatment are concerned. The sex distribution unfortunately varies to a slight degree.

DURATION OF PYREXIA.

In facial erysipelas the temperature tends to fall more or less abruptly with the cessation of the inflammatory process. In the absence of complications, the period of pyrexia may be regarded as a fair estimate of the duration of the illness. Table V. shows the duration of pyrexia subsequent to admission to hospital in the two groups of cases.

TABLE V.—*Duration of Pyrexia Subsequent to Admission to Hospital.*

Series.	Days.														Totals.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Vaccine.. ..	36	38	34	34	27	11	16	7	8	8	5	1	2	8	235
Non-vaccine..	18	33	40	34	38	20	9	11	4	7	1	2	4	14	235
Totals ..	54	71	74	68	65	31	25	18	12	15	6	3	6	22	470

The average duration of pyrexia subsequent to admission to the wards in 235 vaccine-treated cases was 4·97 days. When we add this figure to the average duration of illness before admission—namely, 2·67 days—we arrive at an average total duration of disease in the vaccine-treated series of 7·64 days. In the 235 control cases the average duration of pyrexia subsequent to admission to hospital was 5·41 days. When we add this to 2·64 days, the average duration of illness prior to admission to the wards, we find the average total duration of disease in the control group amounted to 8·05 days.

EXTENT OF SPREAD OF INFLAMMATORY PROCESS.

Should vaccine therapy be efficacious, one would expect that the tendency of the inflammation to "wander" would be much curtailed. The incidence of the wandering type of erysipelas in the two groups of cases is shown in Table VI.

TABLE VI.—*Incidence of "Wandering" Type.*

Cases.	Extent of spread.			Totals and per cent.
	Face to neck.	Face to trunk.	Trunk to limbs or vice versa	
In 235 vaccine	17	18	9	44(18·71)
In 235 non-vaccine ..	11	33	9	53(22·5)

Whilst the figures are in favour of the vaccine-treated group, it is to be noted that extensive spread of the inflammatory lesion occurred in 44 cases in spite of vaccine administration.

INCIDENCE OF COMPLICATIONS.

The various complications met with in the two groups are given in Table VII.

TABLE VII.—*Complications.*

—	Abscesses and cellulitis.	Broncho-pneumonia.	Nephritis.	Pyæmia.	Arthritis.	Totals.
Vaccine series (235) ..	10	2	2	1	0	15
Non-vaccine series (235)	10	4	2	1	1	18

It is disappointing to note that the development of abscesses and cellulitis was apparently unaffected by the administration of vaccine. The lower incidence of broncho-pneumonia in the vaccine-treated series is interesting, although, owing to the relative infrequency of this complication, not entirely convincing.

INCIDENCE OF RELAPSES AND RECURRENCES.

A recurrence may be defined as a repetition of the disease after an interval of months or years. As a purely arbitrary standard, we shall consider a reappearance of the disease within three months of the previous attack as a relapse. Where a period of more than three months has intervened, then a flare up of the erysipelatous process will be regarded as a recurrence. Sixteen cases in each group suffered from a relapse whilst still in hospital. In the vaccine-treated group another four patients were readmitted to hospital within three months of the previous attack and will thus be regarded as suffering from relapses. The percentage of relapses in the vaccine-treated series amounted to 8·5, as against 6·8 in the control series.

No fewer than ten patients who had received a course of vaccine during one attack of erysipelas were readmitted with, in most cases, an equally sharp second attack of the disease from four to 29 months later. Details of two of these cases, chosen at random, are appended:—

CASE 1.—Mrs. A., aged 35. Original attack December, 1921. Facial. Stock streptococcal vaccine. Five doses at three-day intervals ranging from 20 million to 400 million cocci. Second attack March, 1923. Facial. Stock streptococcal vaccine. Six daily doses, 5 to 15 million cocci. Relapse occurred fourteenth day in hospital.

CASE 2.—Mrs. B., aged 58. Original attack February, 1922. Facial. Six doses mixed streptococcal and staphylococcal stock vaccine administered every third day, ranging from 10 million streptococci plus 500 million staphylococci to 200 million streptococci plus 1000 million staphylococci. Second attack March, 1923. Facial. Temperature ten days.

MORTALITY.

In Table VIII. we have the deaths which occurred in the various age-groups.

TABLE VIII.—*Deaths.*

Series.	Result.	Under 1 year.	Age-period in years.								Totals
			1–4	5–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–	
Vaccine	R	6	11	8	29	31	27	44	32	21	5	0	214
	D	6	1	0	0	0	3	3	2	3	2	1	21
Non-vaccine	R	6	12	3	30	32	28	40	34	19	6	1	211
	D	4	2	0	2	0	1	4	5	4	2	0	24

R = Recovered; D = Died.

The death-rate in the vaccine-treated series was 8·94 per cent. as compared with a rate of 10·21 per cent. in the control group. The slight variation in favour of the vaccine series need not, in my opinion, be regarded seriously. It is only fair to remember, however, that the preponderance of males in the vaccine-treated patients would have led one to expect a rather higher mortality in that group than in the control series.

LOCAL TREATMENT.

Without going into detail, it may be stated that a critical analysis of the various local applications led us to the conclusion that in no case did they limit the spread or materially diminish the activity of the inflammatory process. The patients certainly testified to the alleviation of subjective symptoms which followed the application of all three lotions. I still favour as a local application a cold saturated aqueous

solution of magnesium sulphate to which 10 to 20 per cent. of glycerin has been added.

Conclusions.

The study of 235 carefully controlled acute cases of erysipelas has led to the following conclusions. The administration of stock or autogenous streptococcal vaccines, or mixed staphylococcal and streptococcal vaccines, in erysipelas does not (*a*) shorten the duration of the attack, (*b*) prevent extensive spread of the inflammatory process, (*c*) lessen the incidence of common complications such as abscesses and cellulitis, (*d*) diminish the occurrence of relapses, (*e*) prevent recurrences, or (*f*) have any appreciable effect in diminishing the mortality from the disease.

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SULFOSIN THERAPY.

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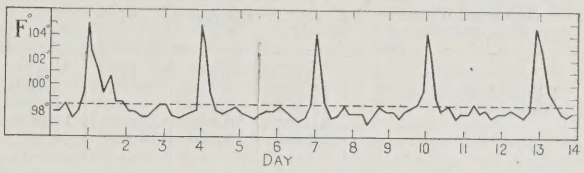
In a paper published at the end of last year Schroeder[1] advocated the use of a preparation of sulphur in oil, known as Sulfosin, in the treatment of general paralysis and certain other nervous and mental disorders. Since that date several other publications dealing with the same subject have appeared, among which may be mentioned those of Harris,[2] Shilvock,[3] and Patterson and Switzer.[4]

For a period of about eight months I have employed injections of sulfosin in the treatment of 14 cases of certified insanity, the majority being general paralysis of the insane. Unfortunately the type of general paralytic who finds his way into a mental hospital is more often than not in an advanced state of cerebral dissolution. His nervous tissue has already undergone a certain amount of irreparable damage and the most that can be achieved by any form of therapy is the arrest of the processes of destruction and the limitation of dementia. Exceptionally, patients are admitted at an early stage of the disease, and it is now generally conceded that very often these may be restored to complete normality by artificially induced malaria. Where, however, gross neuronic damage already exists, one can only appraise the therapeutic worth of any remedy by observing the treated cases over a number of years and noting whether or not the disease has been arrested. For this reason no attempt will be made here to comment on the curative value of sulfosin in the treatment of the complaint for which it was first advocated, but rather to indicate some points of interest about the therapy itself.

Pyrexia.

Regarded purely as a pyrexia-producing agent, sulfosin is, in my experience, far superior to any other substance which has been suggested for this purpose. If Schroeder's directions[1] are carefully followed, an intramuscular injection of this preparation will in the vast majority of instances produce a high temperature within the ensuing 24 hours, and this will almost invariably have completely subsided within 72 hours. By altering the dose the height of the temperature can be regulated with singular accuracy, and usually it is quite unnecessary to employ maximum doses in order to produce an intermittent pyrexia of 104° F.

CHART 1.

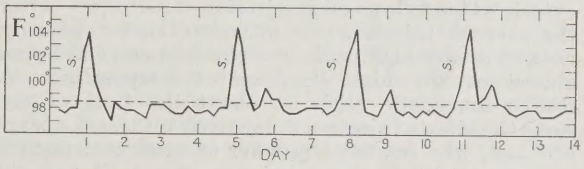


Pyrexia of induced quartan malaria.

A temperature chart closely resembling that of malaria can be obtained without any difficulty, as the accompanying records of actual cases clearly demonstrate.

Chart 1 is that of a case of a general paralytic undergoing treatment by induced quartan malaria and needs no special explanation. Chart 2 is taken from another case of general paralysis who was undergoing sulfosin treatment. In the malaria chart rises of temperature to between 104° and 105° F. are recorded regularly every 72 hours, whereas in the other chart similar pyrexial bouts are produced at any desired interval by an injection of 4·5 c.cm. of sulfosin at 11.30 A.M. on the previous day. As compared with the pyrexia associated with a malarial rigor, the temperature produced by sulfosin takes a little longer to subside, and there is usually a slight secondary rise on the second night following the injection. This secondary elevation is very characteristic of fever induced by sulfosin, but it should be noted that in the case illustrated the temperature had always entirely subsided within 48 hours.

CHART 2.



Pyrexia induced by sulfosin. Injection of 4·5 c.cm. sulfosin at S.

I usually confine myself to eight or ten injections in one course of treatment, but every case has to be judged on its merits as in malaria therapy. A few weeks are allowed to elapse before a second course of injections is given, and this may be followed later by a third course. No marked toleration appears to be established; similar rises of temperature can be obtained in the third course with very much the same doses as were employed at the commencement of the treatment.

Leucocytosis.

One of the most characteristic effects of sulfosin is the very considerable leucocytosis. This reaches its maximum 24 hours after each injection, and in a number of cases the white count has not returned to normal in 48 hours. The accompanying table shows the leucocytic changes which occurred in the blood of four of my cases. The counts were performed half an hour before each injection, and again at intervals of 3, 24, and 48 hours after it, care being taken to avoid the possibility of a post-prandial leucocytosis.

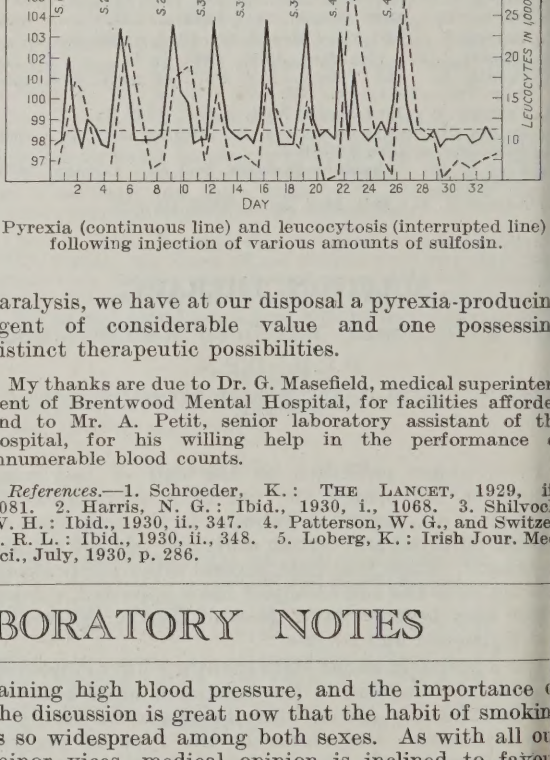
Time before and after injection.	Leucocyte count.			
	(1)	(2)	(3)	(4)
½ hour before	10,400	8,540	7,840	5,280
3 hours after	19,200	8,400	8,800	4,800
24 ,, ,, ...	31,200	16,000	28,000	15,900
48 ,, ,, ...	14,200	8,700	16,800	8,400

A differential count at the height of the leucocytosis showed in the majority of instances a marked relative increase of neutrophil polymorphonuclear cells, so that it is very unlikely that this phenomenon is due to a mere change in blood volume. It indicates rather that there is a general stimulation of the blood-forming organs. In certain cases a white blood count was done every morning at a fixed hour during a course of eight sulfosin injections. The results were very interesting and an attempt has been made to record graphically one such series of counts in Chart 3.

The unbroken line represents the maximum morning and evening temperatures. The broken line indicates the course of the daily white count, which was taken at 9.45 A.M. The amount of each dose of sulfosin, which was always given about 11.30 A.M., is also recorded. The chart shows faithfully the leucocytosis which follows each injection of sulfosin. After the seventh injection the leucocyte curve suddenly rises to a very high peak, and this is succeeded by an almost equally high elevation of temperature. A similar leucocytic crisis at about the time of the seventh sulfosin injection is reported by Karl Loberg[5] of Lund, who treated a number of cases of dementia præcox by this method. My impression is that such extreme leucocytic reactions should be regarded as Nature's distress signals and are indications that the injections should be temporarily discontinued. If Chart 3 be further examined it will be observed that there is no constant ratio between the extent of the leucocytosis and the height to which the temperature rises; nevertheless some relationship definitely exists, because in the only one of my 14 cases in which pyrexial bouts above 103° F. could not be obtained, the leucocytic responses were similarly poor, except after the sixth and seventh injections, when they were very considerable.

These effects of sulfosin on the white blood cells are of absorbing interest and are worthy of much more detailed examination. Whether or not this substance ultimately proves of use in the treatment of genera

CHART 3.



Pyrexia (continuous line) and leucocytosis (interrupted line) following injection of various amounts of sulfosin.

paralysis, we have at our disposal a pyrexia-producin agent of considerable value and one possessin distinct therapeutic possibilities.

My thanks are due to Dr. G. Masefield, medical superinten dent of Brentwood Mental Hospital, for facilities afforde and to Mr. A. Petit, senior laboratory assistant of th hospital, for his willing help in the performance innumerable blood counts.

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CLINICAL AND LABORATORY NOTES

TOBACCO-SMOKING AND HIGH BLOOD PRESSURE.

BY H. H. SANGUINETTI, M.D. OXF.

"HIGH pressure is an attempt of the organism to maintain the equilibrium of its circulation." This quotation from Clifford Allbutt is placed at the head of the chapter on "the causation and significance of high arterial pressure" in Halls Dally's treatise on "high blood pressure." The conclusion to be drawn from such a statement is that it is worse than useless to lower the blood pressure in these cases unless one can at the same time remove the cause. Halls Dally proceeds, however, to point out that "the primary cause or causes of pathologically high arterial pressures are not definitely established," finally tabulating eight possible causes of the condition, among these being toxins.

There has been some discussion on the rôle played by the toxin of tobacco-smoke in producing or maintaining high blood pressure, and the importance the discussion is great now that the habit of smokin is so widespread among both sexes. As with all ou minor vices, medical opinion is inclined to favou moderate indulgence in the habit, probably a sociall wise but hardly a scientific attitude. As a contributio to the study of this question of the influence smoking on blood pressure the following case is interest:—

The patient, a man then aged 54, consulted me September, 1927, about a pain of moderate degree in t right loin, probably rheumatic. He had suffered fro nephritis while in France in 1916, and there was so permanent damage to the kidney, the urine constant containing a trace of albumin. He was micturating fr quently, and an estimation of his blood pressure gave systolic reading of 235 mm. Hg, with a diastolic pressure 135 mm. The heart was considerably enlarged, with t apex-beat in the sixth space one inch external to the nipp line. The heart sounds were normal, with the excepti of some accentuation of the second sound at the base. T radial arteries did not appear to be affected with arter sclerosis. The Wassermann reaction was negative.

The history and the clinical findings suggested that t primary condition was chronic nephritis with seconda arterio-sclerotic changes. The patient did not take alcoh

but smoked about 17 cigarettes a day. Although there were no obvious disturbances of health, except a feeling of lassitude, such a high blood pressure in a nephritic subject could not but be regarded as serious. Tests of renal function were satisfactory, showing blood-urea 0·038 per cent., urea concentration 2·9 per cent., and range of urea concentration (Calvert's test) 2·2 per cent. to 1·45 per cent. The last test indicated some impairment of water excretion, but there was no other evidence of water retention.

For three years the patient ran through the gamut of treatments: iodine, thyroid extract, a vaccine from extracted teeth, high-frequency current, venesection, a course of treatment at Harrogate, and the oral administration of sodium thiosulphate. Venesection (very temporarily) and sodium thiosulphate reduced both systolic and diastolic pressures considerably, but the latter made the patient feel so poorly that he discontinued it. In May of this year the blood pressure was 230/130; the general condition was much the same, with a possible slight impairment of renal function, the urea concentration (which had been 3·7 per cent. in 1928) being now only 2·6 per cent.

Without hope of dramatic change I urged the cessation of tobacco-smoking, a measure I had unsuccessfully urged when I was first consulted. The patient now accepted my advice, and by a gradual process had ceased smoking at the end of a fortnight. Coincident with the reduction of smoking the blood pressure fell to 182/95, while cessation of smoking was followed by a further fall to 175/85.

It cannot be said that in consequence of the reduction the patient felt better, but he had not the unpleasant sensations accompanying the fall produced by the exhibition of sodium thiosulphate, and the urea concentration of 3·6 per cent. indicates improvement of the renal function. Time is required for the organism to adjust itself to so considerable a fall in blood pressure. However, the prognosis appeared distinctly more hopeful, when the patient resumed his cigarettes, apparently not considering the lowering of the blood pressure without a more immediate improved sense of well-being sufficient compensation for the great deprivation of smoking. The blood pressure responded by rising, and when the habit had been fully resumed it had returned again to its previous high level. As further evidence of the effect of smoking on this patient I am inclined to welcome his fall from grace, but I fear that the continued high blood pressure may soon have produced irremediable changes in the circulatory system and kidneys.

London.

A CASE OF UNDULANT FEVER.

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MEDICAL OFFICER OF HEALTH, HUDDERSFIELD.

On August 18th, 1929, a man was admitted to the Huddersfield Royal Infirmary complaining of attacks of shivering, intense sensations of bodily heat, followed immediately by very profuse sweating. He had suffered from this condition for three weeks before his admission to hospital.

On July 20th, 1929, he went to Colwyn Bay for his holidays and remained there until July 31st. During this period he had one or two shivering attacks, after which he perspired very freely, and felt generally out of sorts. He returned to work on August 1st, and on August 4th he felt very ill, had violent shivering attacks, and could not keep warm, even when near a hot fire. His doctor was called in and noted that he had a high temperature, and also that he complained of aches in his legs, but was unable to find any definite muscular pains or any evidence of gastro-intestinal disturbance. Between the rigors the man appeared to be in quite good health, but on August 18th the doctor decided to get him to hospital for investigation, and he was accordingly admitted on that day.

Clinical examination in hospital revealed nothing of note; the spleen was not enlarged, but his chart soon showed that there was a rise of temperature each afternoon, at almost the same time each day, to the region of 100° to 102° F.; this state of affairs continued for four days. In each case the rise of temperature was accompanied by a typical rigor and was succeeded by the most profuse sweating.

The question of malaria arose, but blood films failed to show any parasite, and the only occasions on which the patient had been out of England were in 1911 to Jersey, and on several occasions since to Ireland. Blood examinations revealed a leucopenia (5000 leucocytes per c.mm., of which 41 per cent. were lymphocytes). Blood cultures were collected on three occasions but remained sterile, even after ten days' incubation at 37°C. The Widal reaction was negative to *B. typhosus* and *B. paratyphosus* A and B. Examination of the urine and fæces proved negative.

At this stage a tentative diagnosis of undulant fever was made, and was confirmed by testing for agglutinating power the serum of the patient with the standardised agglutinable suspensions of *B. melitensis* and *B. abortus* supplied by the Standards Laboratory, Oxford. The patient's serum caused agglutination to a titre of 1 in 500.

By this time his condition had markedly improved; the rigors, which had occurred every day at first, became less frequent, and at the end of three weeks had completely ceased, no further rises of temperature being noted.

As soon as a diagnosis of undulant fever was confirmed it was deemed prudent to notify the medical officer of health for Huddersfield, in order that he might trace the avenues of infection. This was a matter of considerable difficulty, in view of the fact that the patient had begun to be ill in Colwyn Bay, and our thanks are due to Dr. W. McKendrick, medical officer of health for Colwyn, for his help in inquiring into the question of any similar cases, and of any cases of abortion in cattle in his area. He found no evidence of any such cases.

One of us (S. G. M.) instituted inquiries at all farms in the Huddersfield area from which milk had been supplied to the patient, but he was assured that no cases of cattle abortion had occurred in their animals, and he also noted that these farms had been recently inspected by the veterinary surgeon. Samples of milk were examined bacteriologically by the public health authority, with negative results, and samples, together with controls, were tested by one of us (D. G.) for agglutination of the suspensions of *B. melitensis* and *B. abortus*, again with negative results.

No other cases of a similar nature have been reported in the Huddersfield area, and this is evidently a sporadic case of undulant fever. We wish to emphasise the importance of coöperation, in all such cases, between the clinician and the public health authorities, with a view to tracing the source of infection, even though in our case we can only produce negative results. It would also seem worth while in the investigation of pyrexia of unknown origin to make the test for agglutination of *B. abortus* a routine procedure, as these cases appear to be on the increase in this country.

Our thanks are due to Dr. Jane Miller, honorary physician to the Royal Infirmary, Huddersfield, for permission to carry out these investigations.

Manchester Epileptic Colony Extension.—It has been decided to enlarge three of the houses of the David Lewis Epileptic Colony. Last year the average number of colonists was 376, and Dr. Alan McDougall points out in his annual report that these were patients who had failed to respond to medical treatment at home. The successes of the colony he attributes mainly to the general atmosphere and mode of life.

Swansea General and Eye Hospital.—In the report for the year 1929 attention is called to the difficulties of accommodation and the long waiting-list, which at the end of the year numbered 442. Accidents and emergencies represent approximately 50 per cent. of the total admissions; thus only half the number of beds are available for the normal numbers applying for hospital service. The average daily number of in-patients was 266·41, and the average stay 21·21 days. The average cost per bed occupied was £145 19*s.* 2*d.* The 28,891 out-patients cost 7*s.* 1½*d.* each. Employees' contributions totalled £24,816, an increase of £955 over the previous year.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY.

AT a meeting of this Section on Dec. 3rd, the President, Mr. C. H. FAGGE, being in the chair, a discussion on

Surgery in Diabetes

was opened by Prof. G. E. GASK. The subject fell, he thought, conveniently under headings—e.g., what should be done (*a*) when glycosuria is discovered in a patient for whom an operation of convenience (hernia, removal of appendix in the quiescent period) is proposed; (*b*) in a patient requiring a life-saving operation, such as intestinal obstruction or acute appendicitis; (*c*) in a case of gangrene associated with diabetes; (*d*) in pyogenic infection such as carbuncle associated with diabetes. In 1898 Treves wrote: "Diabetes offers a serious bar to any kind of operation for injuries involving open wounds; hæmorrhage or damage to vessels are exceedingly grave in the subjects of this disease." If a patient at that time came to St. Bart.'s and was discovered to have diabetes, operation was avoided. This was in pre-insulin days. The introduction of insulin had greatly modified surgical practice; operations previously undreamed of in diabetic subjects were now carried out with comparative safety.

Dealing with heading (*a*), he would say that, given proper treatment and a due quantity of insulin, there was no bar to operation, for there would be but little more risk than in the ordinary patient. Under heading (*b*) he would say that the life-saving operation should not be postponed. The surgeon should inject a proper amount of insulin and give an appropriate course of antidiabetic treatment. Under heading (*c*), he was speaking of the type of patient who had arterio-sclerosis plus diabetes in addition, with commencing gangrene of a toe. Here he did not feel justified in speaking dogmatically, as he did not feel quite sure. In pre-insulin days he would have advised amputation of the limb, high up where collateral circulation was best. Now a more conservative treatment could be carried out with safety. By the proper use of insulin, associated with warmth and light treatment, much could be done to prevent the spread of the gangrene and its change from the dry to the wet form. Under heading (*d*) he felt that more than in any other kind of case, insulin should be given, and given early, steps being taken to lessen the severity of the pyogenic infection, for suppuration had a serious effect on the diabetic process.

Local anæsthesia was to be preferred, said Prof. Gask, in the great majority of cases. But if local anæsthetics were not available or there was some good reason against their use, a general anæsthetic must be given. Operation had to be done quickly, and the choice of the anæsthetic must be subservient to that. If gas-and-oxygen was not sufficient, it should be supplemented by ether; chloroform was to be avoided.

MEDICAL ASPECT.

Dr. GEORGE GRAHAM said that under Prof. Gask's first heading the prime necessity was to make a diagnosis, for not every one who had dextrose in the urine was diabetic. If diabetes was diagnosed and operation was required, there should be a proper preparation of the patient by insulin and dieting. That should always be possible, unless the diabetes was very severe, in four to seven days. Every large hospital should by now, he thought, have an expert dietitian, with proper kitchen, so as to ensure a patient having the food he was supposed to have. Three hours prior to operation such patients should be given a definite dose of sugar, and 15 or 20 units of insulin; half an hour before operation was due to commence another dose of sugar should be given, to ensure that the patient had enough glycogen in the liver in case it was necessary to give ether as a general anæsthetic. In acute cases it was impossible to delay the operation while the patient was being prepared in the way mentioned; but if time allowed, a blood-sugar estimation should be done, 50 g. of dextrose being given by the mouth. Some people with severe diabetes did not have a high blood-sugar; a large dose of insulin did them harm. He gave insulin before the dextrose. If the patient was vomiting sugar should be given intravenously in a pint of saline. Saline was useful in a vomiting patient as it gave him back some of the salts he had vomited.

There was, he thought, no such condition as diabetic gangrene in the sense that diabetes predisposed to gangrene; these people had gangrene because they had bad arteries; possibly a badly chosen diet, with much fat, had helped to produce the arterial disease. But diabetes certainly made the gangrene worse. Once diagnosed the sooner pathogenic infections were dealt with the better, because all septic conditions adversely affected the patient's sugar tolerance. The longer such patients had the infection and were without due quantities of insulin, the worse would the diabetic condition become; any disease would have the same effect. A woman of 77 with carcinoma of the breast, for which radium was inserted, required double the amount of insulin during the time the radium was in situ in order to keep the sugar curve right. On the removal of the radium a return to the former insulin dose was possible. In such conditions as severe carbuncles insulin was very valuable; the same was true in many states of deterioration of tissue, and in certain patients who had not got frank diabetes.

DISCUSSION.

Dr. R. D. LAWRENCE wished, for practical purposes, to make a clear distinction between ordinary surgical procedures in diabetics, and surgery in conditions produced entirely or partially by diabetes. In the first group he considered that the surgeon need have no special considerations or special responsibilities. Patients in the second group required special thought. He showed a table of 163 cases of diabetes which had been operated upon, with 13 deaths. Most of the patients who died were elderly and were, he said, carried off mainly by complications to which anyone of similar age would be liable. In all these operations the thing to fear was the onset of acidosis. A glycosuria lasting only a few days needed little consideration so long as the sugar was controlled. It was impossible to lay down a standard of treatment for every case; each patient must be separately dealt with. Often there was a changing degree of sepsis in these conditions, and as the sepsis became better the diabetes grew less.

Chloroform was the worst anæsthetic because it had the greatest toxic action on the liver; even under the best conditions of treatment the liver of the diabetic never had as much glycogen as the normal

ne; a liver deficient in glycogen was liable to suffer arenchymatous damage from chloroform. So long s no local sepsis was present, he thought local næsthesia was best. For operations on the lower mbs, spinal anæsthesia was ideal. Avertin was rgely used in American clinics for diabetic cases; e had tried it in two cases and had been very tisfied. It was important to avoid vomiting fter operation; if the patient vomited and was not iven carbohydrate and insulin he drifted into cidosis, and the vomiting became worse. After peration it was necessary to watch the patient losely, and, if necessary, to vary the treatment from our to hour, certainly from day to day.

If the circulation was good, a case could be treated n the usual surgical principles, the best guide to the ate of the circulation being the degree of pulsation in ie dorsalis pedis artery. Sometimes there was present combination of calcification and obliterative ndarteritis. The skiagram was apt to mislead ecause apparent calcification did not necessarily ean that the leg must be amputated high up. 1 the presence of a rapidly spreading sepsis and mphangitis there was no possibility of saving the mb; one could only strive to save life. In cases of hat might be called the diabetic acute abdomen, was difficult to decide what to do; it might be 1 acute appendix, a perforated gastric ulcer, or other bdominal catastrophe. If the temperature was ised, that was in favour of the pain and symptoms ot being entirely due to the diabetic condition. there was reason to suspect acute disease, like ppendicitis, it was better to operate, even at the sk of being proved wrong.

Mr. CYRIL NITCH said that to deal successfully ith cases of diabetes required close coöperation etween surgeon, physician, and biochemist. In man of 80 with prostatism, he had seen extreme rvousness produce a reduction of Fehling's solution; hen the nervousness had passed the urine was normal ain. Insulin must never be given in a haphazard ay; it must always be controlled. A minor opera- on might be dangerous, whereas a major operation ight restore the balance. When the case was not gent, stabilisation could be produced by diet alone, only a small amount of insulin might be needed fore (and possibly after) operation. In emaciated d septic cases insulin must be given with caution, only a small amount of it might cause hypo- ycæmia. In the presence of severe acidosis which ght develop two days after ether anæsthesia, ucose should be given intravenously. Fluid in antity should be given, because comatose patients re rapidly dehydrated. He agreed that spinal æsthesia was best for operations below the umbilicus. 1 objectionable sequel of gas-and-oxygen was anosis; unless administered by an expert it was t suitable for prolonged operations. He recognised o types of gangrene: (1) due to arterio-sclerosis— ., senile gangrene in a diabetic; (2) due to infection gravated by diabetes but not always complicated a defective circulation. Non-operative measures re applicable to superficial gangrenous patches or ers; these included systematised exercises— o minutes elevation of the limb, followed by three nutes depression—and the use of artificial sunlight. r sepsis and spreading gangrene high amputation uld be done without delay.

Dr. OTTO LEYTON said it was not infrequent for angrenous patch to heal even when there was no preciable pulse at the ankle. At the London spital he treated his cases of gangrene with hot ine, and with warmth for long periods. He could confirm the good results obtained by H. N. Mukhirjee, from the use in these cases of phospho-tungstate of insulin.[1] It seemed as if, in the future, it might be possible to control diabetes mellitus by the administration of this insulin preparation by the mouth though it was true that about six times the usual dose was needed.

Dr. P. W. CAMMIDGE spoke of the high proportion of diabetics who had septic feet; when treated with insulin, local cleansing, and careful dieting even apparently hopeless cases recovered. He spoke approvingly of avertin as an anæsthetic. To cases of diabetes requiring operation he gave insulin and glucose before the operation, and an injection of glucose in a considerable quantity of fluid immediately after. The whole of the treatment should be controlled by blood-sugar analyses.

Mr. J. B. HUNTER spoke of the control of severe cellulitis in young patients by means of insulin; the process was in this way kept local, and the abscess could subsequently be evacuated. Diabetics often developed a sore on an unclean foot which was not gangrenous. These cases should be sat up in bed to check the tendency to spread into the tendon sheaths.

Dr. E. SKIPPER also emphasised the importance of the care of the feet, especially in the middle-aged. At the London Hospital it was the practice to watch these cases as long as possible, giving them local treatment such as saline baths, covering with a layer of gauze and exposure to the sun.

SECTION OF OTOLOGY.

AT a meeting of this Section, held on Dec. 5th, with Mr. ALEXANDER TWEEDIE, the President, in the chair, a discussion on

Intracranial Complications of Otitic Origin

was opened by Dr. GEORGE RIDDOCH, who dealt with neurological examination and the indications which should lead the clinician to suspect the spread of infection inwards and the presence of retained pus within the skull. His contribution, he said, might be regarded as complemental to a paper on the diagnosis and localisation of cerebral abscess, read by Dr. C. P. Symonds to the Section three years earlier.[2] What symptoms and signs should, Dr. Riddoch asked, lead to the suspicion that intracranial symptoms might develop in cases of ear infection? He thought it best to limit the discussion to cases in which adequate drainage had been established, as by spontaneous rupture of the drum, or by paracentesis. If in acute ear disease, in spite of good drainage, the patient continued to feel ill and had no appetite, had also headache and increased pulse-rate, spread of the infection was probable. After a few days the symptoms might subside, and not recur, owing either to the mildness of the infection or to the patient's natural powers of resistance. Yet the passage of the acute stage did not necessarily mean that danger was past. Instead of subsiding, the symptoms might merge into those of acute intracranial complications, such as lateral sinus thrombosis, extradural abscess, meningitis, and encephalitis. The occurrence of these symptoms should demand periodic examination for some months.

Acute complications.—Lateral sinus thrombosis was indicated by a swinging temperature, shivering or rigors, and tenderness over the jugular. Additional evidence was sometimes supplied by Queckenstedt's test. Extradural abscess was notoriously difficult

[1] See THE LANCET, Sept. 27th, p. 707.
[2] THE LANCET, 1927, i., 392.

to diagnose, especially in cases of acute otitis media before drainage had been established, as the symptoms were overshadowed by the aural condition. In regard to mastoiditis, Dr. Symonds doubted whether uncomplicated mastoid disease was associated with spontaneous complaint of headache, though tenderness to pressure was an almost constant and a very important sign. If that were true it was a great clinical help. Dealing next with meningitis, Dr. Riddoch considered that the qualification "serous" should be abandoned, as it had no pathological meaning. Meningitis might be mild or severe, localised or general, but it was always caused by pyogenic organisms involving directly the meninges. When the infection was of low virulence, no organisms were found in the cerebro-spinal fluid, though there was an increase of mononuclear cells. If no abscess formed the meningitis frequently cleared up. Absence of organisms from a sample of cerebro-spinal fluid drawn off was of great prognostic value. Mild cases of meningeal inflammation tended to clear up spontaneously if the source of the infection was eliminated. Concerning meningeal abscess, he recalled Dr. Symonds's remark that for some reason unknown the infection in the route from ear to brain was stopped at the level of the lepto-meninges and formed pus, which was shut off, so that the infection was prevented from spreading throughout the sub-arachnoid space, and the brain was affected only superficially.

Chronic complications.—Intracranial abscess was often not suspected, in spite of a history of aural infection, until general symptoms of raised pressure or gross focal signs were present; and even then hospital records showed that a wrong diagnosis was often made. The history was of the utmost importance in giving a clue to the nature of the lesion. Examination of the cerebro-spinal fluid should be made, for increased protein and cell count provided valuable information. Dr. Riddoch related a typical case of the condition, headache being a very prominent symptom. Another group characterised by recurrent headaches, although usually with the absence of other features, suggesting the formation of a chronic brain abscess, was chronic arachnoiditis. Sometimes, however, alarming symptoms such as papillœdema might arise. In one such case related by H. Cairns the papillœdema was followed by optic atrophy, succeeded by blindness, the child remaining otherwise healthy.

DISCUSSION.

The PRESIDENT agreed that tenderness over the mastoid or a limited mastoiditis was not a necessary indication that the mastoid was involved; he hoped it would not be included in the indications for operation. He also agreed that a substitute was needed for the term "serous" meningitis.

Sir JAMES DUNDAS-GRANT, referring to the diagnosis of lateral sinus thrombosis, said it usually was easy to get fluctuation between the internal jugular vein not exposed and the exposed sinus, and if that was absent the observer could be sure a complete blockage existed below. Extradural abscess could exist without any symptoms of it being present. With reference to mastoid tenderness in mastoiditis, otologists had laid it down that tenderness over the mastoid in the first week of acute suppurative inflammation in the ear indicated merely a congestion. But if it persisted longer something more was probably developing in the superficial cells. He had seen one or two cases of disease in the ponto-cerebellar angle in which the cerebellar symptoms were well marked, but disappeared when the dura mate was laid open and a puncture made in the meninges allowing of the escape of fluid. In cerebello-pontin angle conditions the labyrinthine reactions shoul be done.

Dr. C. P. SYMONDS admitted the difficulty o deciding whether, in a given case, a cerebral absces was or was not present. When it was reasonabl certain that one was present, its localisation o neurological grounds was not particularly difficul When a case was dealt with in which abscess wa proved, it was valuable to review the history of th case and see what were the points which first led t the suspicion that such invasion had occurred. H would like otologists to decide at what point in case of otitis media the headache, pain, fever, &c must be regarded as indicating more than the usu ear condition—i.e., as justifying the suspicion of a intracranial complication; also, what was the norma clinical picture of post-operative convalescenc from acute otitis media or mastoidectomy. H described a clinical picture which at first seemed t resemble that of cerebral abscess, but which h considered to be due to a localised basal meningit with secondary internal hydrocephalus. He had ha three such cases, and in each the story was much th same: an acute otitis media or exacerbation of a old otitis media, followed by symptoms indicatin meningitis. Exploration showed the dura mater t be under great tension. There were no localisin signs of cerebellar or temporal abscess in his three case and each of them made a complete recovery. H related one of them in detail.

Mr. J. S. FRASER said he was interested to he Dr. Riddoch mention the time-honoured text-boo dictum concerning tenderness along the intern jugular vein. In his own experiences this was n a symptom of lateral sinus thrombosis. He ha found that mastoiditis alone seldom or never cause a temperature of over 100° F., except in the case young children, and in adults suffering from influen or other febrile conditions. The ordinary case mastoiditis did not complain of headache aft the operation; and should severe headache occ at such a time he suspected an intracranial complic tion, probably meningitis.

Mr. F. W. WATKYN-THOMAS said he did not see ho mastoiditis alone could cause headache at the verte unless there was some dural involvement. But th possibility of accessory sinus infection should always b borne in mind. In disease conditions at the cerebell pontine angle he had several times noted that th patient had the head firmly tucked over to th affected side, when there was no question of stern mastoid involvement, and every effort to straighte it was resented.

Mr. T. B. LAYTON considered that after an acu mastoid all the untoward symptoms should be go in 48 hours, and the pain should have ceased. If no washing out the wound with a pint of saline shou cause the temperature to come straight down. this did not happen he would suspect some furth complication. He did not think that tenderne over the mastoid was a symptom of inflammation the cancellous bone, which was what one wanted recognise; it was an indication that inflammati had spread through the cortical bone and was begi ning to involve its periosteum. In acute otitis med pain disappeared so soon as the drum-head w ruptured or paracentesis had been performed, it did so after the patient had had a good slee If, however, pain should appear there next day would begin to suspect that the bone behind t

middle ear was involved. A thrombosed sinus should be left alone after dealing with the inflamed area around.

Mr. LOWNDES YATES said that sometimes he had been assisted by examining the type of mastoid which the operation revealed. In many cases the mastoid had thinned, and in those there was apt to be tenderness during the inflammation of the mastoid cells, due to the periostitis overlaying it. When the bone was very thick he had noted a liability to intracranial complications.

Mr. SYDNEY SCOTT spoke of the cases in which a brain abscess was so large that it involved the whole temporo-sphenoidal lobe and extended into the occipital lobe, and was undiagnosable by the physician or the neurologist. He had seen such a case without optic neuritis, and when the dura mater was exposed there was no increase in the intracranial pressure. In one patient he saw a brain tumour had been diagnosed for two years, but she was found to have in abscess in the region of the uncinate gyrus; it was an abscess of a solid type. No patient should be allowed to go to the post-mortem room with unrecognised empyema.

Mr. H. V. FORSTER referred to the value of exploration in the recognition of brain abscess, and mentioned five cases in which this enabled him to arrive at the diagnosis, and the patients got well.

Dr. RIDDOCH briefly replied.

Dr. A. B. ROSHER read a paper on the examination of the cerebro-spinal fluid as an aid to the diagnosis of otological conditions. Discussion followed and a number of cases were shown.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

Maternal Mortality Report.

A MEETING of this Section was held on Nov. 21st, with Sir EWEN MACLEAN, the President, in the chair, when a discussion was held on the interim report of the Departmental Committee on Maternal Mortality and Morbidity. The discussion was opened by Dr. T. WATTS EDEN and Dr. J. S. FAIRBAIRN.

Dr. Eden described the general scheme of the report and welcomed the Committee's endeavours to ascertain the "primary avoidable factor" in each of the 2000 deaths which were investigated. This factor was not necessarily, he said, the direct cause of death, as in some instances the factor was failure to carry out any antenatal supervision. Some interesting facts came out of the inquiry, one being the number of deaths which occurred during normal labour. The occurrence of sepsis in so-called normal labour was very high indeed, and in the majority of these cases no primary avoidable factor could be discovered. In explaining these two crucial subjects—viz., the cause of death in normal labour, and the frequency with which sepsis follows normal labour—the Report gave no help at all. The Committee's recommendations as to the provision of better treatment for cases of miscarriage in hospitals were to be commended. Dr. Eden discussed the training of medical students, and said that the schemes put forward by the Committee should have the utmost consideration. The increased number of obstetrical cases suggested by the Committee for the training of students could only be obtained if the Government and the local authorities were willing to place at the disposal of teachers very much increased facilities for the training of both students and post-graduates in connexion with the new hospitals which had recently come under the control of local authorities. Such an opportunity might never arise again, and it ought to be made use of to the utmost.

Dr. Fairbairn was impressed with the unanimity of the members of the Committee. He referred to other reports where the maternal mortality-rate was found to be diminished among the poorer classes, although the general idea is that it is lower among the better housed and better fed members of the community. Dr. Fairbairn discussed the social factors in these cases of maternal death and the influence of maternity insurance. He thought that if doctors did not attend cases of normal labour it would be difficult for them to keep themselves up in what one would call the ordinary normal labour. The health of the patient herself and all her social conditions had to be considered as being of the greatest importance. The relief of pain generally had brought about the consequence that pain is not as easily borne as formerly. The new situations of modern life must be considered, especially with regard to the maintenance of normal function. This applied to the problem of anæsthetics in labour.

Dr. W. H. F. OXLEY said that the Committee could not be blamed for not finding out the cause of maternal mortality. It was appointed first to advise upon the application to maternal mortality and morbidity of the medical knowledge at present available, and second to inquire into the needs and direction of further research work. It was the aim of the Committee to give the Government some practical method whereby a reduction in the maternal mortality could be effected and the direction in which further research should advance.

Prof. R. J. JOHNSTONE was concerned most with the education of the medical students, and this part of the Report was new. The problems were—can the teaching schools put these regulations into effect, and if so, will they produce a competent practitioner? These questions had been discussed by Prof. Munro Kerr elsewhere.

Lady BARRETT said the openers of the discussion had brought forward two important points in the Report. One was that only in 50 per cent. of the cases was the cause of death found. It was necessary, therefore, to look for the causes of sepsis elsewhere than in contact cases. The other factor was the woman herself, and this should be considered before any other. Practitioners were not necessarily all experts, but they should have reasonable skill, judgment, and knowledge. Would these regulations ensure the fulfilment of these conditions? It was difficult to get women to undergo antenatal supervision if it meant residence in hospital or attendance at a long distance clinic. The claims of her home were usually her first consideration.

Mr. W. GILLIATT said that the General Medical Council or the examining bodies do not insist on the present regulations being carried out with regard to 20 cases.

Dame LOUISE MCILROY thought the chief value of the Report was the crystallisation of the opinions of the representatives of societies and the obstetricians who gave evidence before the Committee. She believed that antenatal supervision should be carried out by trained obstetricians.

Mr. DONALD ROY said there was now an opportunity for making a very definite advance towards obtaining the requisite number of cases for medical students. The necessity for more obstetrical beds or facilities elsewhere must be pushed by the medical schools. The welfare of the patient was the first consideration when the administration of anæsthetics is considered. Women who were delicately nurtured had more fear

of the pain of labour than the women of the working classes, who were in closer touch with the reality.

Dr. G. W. THEOBALD gave the opinion that midwives should not be allowed to make vaginal examinations, and doctors should be restricted to forceps application only. Any other operation should be done by a specialist. More maternity hospitals are necessary throughout the country for the admission of complicated cases and for the training of students.

Prof. F. J. BROWNE reminded the meeting that the report was only an interim one. One of the chief problems was the cause of death in normal labour. He had a firm belief in Listerism as a prevention of puerperal sepsis. The whole scheme was based on a recognition of the fact that the psychology of women had changed and that she demanded premature interference because she could not bear pain well. Prof. Browne discussed the advisability of the direct responsibility of the teacher in signing up students for examination. The standard of training of the general practitioner was most important.

Mr. COMYNS BERKELEY believed that everything the Committee recommended should be carried out with regard to the training of medical students. The additional number of cases required could be found in the hospitals of the London County Council.

The PRESIDENT said that the report conformed very much with the opinions generally expressed by obstetric teachers.

Dr. EDEN and Dr. FAIRBAIRN replied.

SPECIMENS SHOWN.

Mr. JOHN H. HANNAN showed the following specimens: (1) Large bilateral Krukenberg's tumours of the ovary. (2) Endothelioma of the ovary. (3) A peri-urethral fibroma. (4) Dermoid cyst of the ovary with a basal-celled carcinoma in its wall. (5) Carcinoma of the body of the uterus from a young woman. (6) Carcinoma of the Fallopian tube. (7) Primary carcinoma of the urethra.—Mr. T. G. STEVENS, Mr. M. H. OLDERSHAW, and Mr. TREVOR DAVIES took part in the discussion. Mr. HANNAN replied.

REVIEWS AND NOTICES OF BOOKS

Diseases and Injuries of the Eye.

A Text-book for Students and Practitioners. Third edition by WILLIAM GEORGE SYM, M.D., F.R.C.S.E., late Ophthalmic Surgeon, Edinburgh Royal Infirmary. With 24 full-page illustrations, 15 of them in colour, and 58 figures in the text. London: A. C. Black, Ltd. 1930. Pp. 493. 12*s*. 6*d*.

EVERY text-book of worth, besides being a correct statement of the conclusions on diagnosis and treatment on which all authorities are agreed, is distinguished by a method of presenting the subject which reveals the author as having some originality of mind. Dr. Sym's book is an instance; it can be read, even by those who are familiar with the subject, with pleasure and profit. At the same time it is eminently practical from the point of view of the student. Omitting the usual introductory chapters on the anatomy and physiology of the eye for which the student must go elsewhere, and reducing optical formulæ and diagrams to the bare necessary minimum, Dr. Sym devotes his first chapter, on the general examination of the eye, to the varieties of pain of which patients complain, stressing the fact that in many of the most important affections of the eye no pain whatever is felt, and to the different ways in which sight may be impaired. Thus the student is made familiar from the outset with the four fundamental divisions of the sense of sight—light sense, form sense, colour vision, and binocular vision. Throughout the rest of the book the teaching follows traditional lines, being mostly confined to what a student, though not an advanced student, needs to know. In the chapter on iritis the term "rheumatic iritis" is retained, not because the author suggests that it is anything but very rare in association with acute rheumatism, but because it is not infrequently associated with chronic rheumatoid arthritis. His reference to those cases, where with true iritis there exists increased intra-ocular tension, is perhaps not very satisfactory, for the unqualified condemnation of atropine in these cases will not meet with universal assent among ophthalmic surgeons. The responsibility of treating these difficult cases should certainly be left to an expert where possible. We do not complain that in a book of this sort no reference should be made to the latest treatment for detachment of the retina, or to the latest theories of the intra-ocular circulation of fluid in connexion with the problems of glaucoma, but we deprecate the omission of any reference to arterio-sclerotic changes in the retinal vessels. The ability to detect these, though not easily acquired, is of very great importance in connexion with many problems which occur in general practice. We may add that the coloured illustrations are good.

A Treatise on Orthopædic Surgery.

Ninth edition. By Dr. ROYAL WHITMAN. London: Henry Kimpton. 1930. 45*s*.

THE fact that Dr. Royal Whitman's treatise on orthopædic surgery has passed through nine editions in the last 30 years is sufficient proof both of the excellence of the book and of the progress of orthopædic surgery. It now occupies 1085 pages and has 981 illustrations. The present edition has been thoroughly revised by the author, but the sifting process might have been more drastic, for much dead matter is included in the text, and the general surgeon or practitioner might well fall into some of the errors of his forefathers from lack of definite instructions. Thus, under the heading of operative treatment for calcaneus, Willett's operation of tendon shortening is still described, together with Willett's original directions (1880), whereas this operation has been universally abandoned. It is interesting historically and should be inserted in a paragraph on the history of treatment; it would, if placed there, serve a further useful purpose in preventing its rediscovery. In the chapter on tuberculosis of the hip no mention is made of the method of extension by body-weight on an inclined plane, used at Carshalton and elsewhere, and the citation of percentages and causes of death from statistics culled from deaths between 1877 and 1884 is only of historic interest. What we want to know nowadays are the results of open-air treatment and a comparison with those of 60 years ago. The benefits from extra-articular arthrodesis are difficult to estimate in this country, and a fuller account would be welcome from an author working in the sanatorium city as Hibbs. Dr. Royal Whitman's own operatic

of astragalectomy with backward displacement has many opponents both in England and America, and the inclusion of an account of late results by the author, illustrated by statistics, by post-mortem findings, and by radiography should help to prove its advantages. The chapter on fractures is incomplete, but we have a full description of the abduction treatment of fracture of the neck of the femur which will be associated always with the name of Royal Whitman. We hope in the next edition to find a note on the use of skeletal traction in orthopædic and traumatic surgery.

Traité de biocolloïdologie.

Tome I. *Pratique de Colloïdes.* Deuxième edition. Fasc. III: Mesures Capillaires et Electriques. By W. KOPACZEWSKI. Paris: Gauthier-Villars et Cie. 1930. Pp. 363–527. Fr.40.

M. Kopaczewski has embarked on an immense task. In a treatise of five volumes he proposes to describe the colloidal phenomena occurring in biology and medicine, and to apply the principles of colloid chemistry to those sciences. The first volume, Pratique des Colloïdes," is an enlarged and revised version of the author's "Théorie et pratique des colloïdes en biologie et en médecine," which was published in 1923. The first two parts of this volume were entitled "Propriétés mécaniques des colloïdes," and "Mesure des concentrations moléculaires et moniques"; the fourth part, "Mesures optiques et données numériques," has yet to appear.

In the third part, which consists of chapters on viscosity, surface tension, electrophoresis, and dielectric constant, the value lies in the excellent summary of experimental methods and technique. Some of these methods are not to be found in any other textbook, and many, including several devised by the author himself, are of remarkable ingenuity and interest. The sources of inexactitude and the methods used to combat these are clearly and logically described. If one or two productive methods are neglected it is doubtless because the author has preferred to describe those of most use in biology. M. Kopaczewski has made a special study of "l'analyse capillaire," and has reached interesting conclusions on a little-known subject.

At the beginning of each chapter there is a brief summary of several aspects of our knowledge of the subject. At the end of each chapter the author has made a conscientious effort to summarise the results of the application of these experimental methods to biology and medicine. This is an original idea and perhaps the most interesting part of the book, but it is obvious that the attempt has severely taxed both the ingenuity and the wide knowledge of the author. The redemption of his promise to elaborate these results in the succeeding volumes will be awaited with interest.

The Picture of Paris.

By LOUIS SEBASTIEN MERCIER. Translated with an introduction by WILFRID and EMILIE JACKSON. London: George Routledge and Sons. 1930. With 12 illustrations. Pp. 256. 12*s.* 6*d.*

Prof. Mercier was born in 1740, at the beginning of Madame de Pompadour's reign over Louis XV.; he was just of age when "Émile" appeared; he grew up with the leaders of the revolution, and he died the year before the battle of Waterloo. Judging from the interesting biographical details contained in the introductory sketch by the translators he responded freely to the political and social changes amid which he spent his life. A solid claim can be put forward for him as a prophet of the revolution, he became editor of a Girondist journal, as a deputy he voted against the execution of the King, but he escaped the fate of most of the Girondist leaders and saved his head. He said of himself that a man who came as near the guillotine as he did might well fall out of love with revolution, and as a matter of fact he became a reactionary under the Republican régime, and died just as the career of Bonaparte was closing in disaster.

Mercier prophesied that his book, "The Picture of Paris"—he wrote much else of many kinds—would be found useful in 100 years to come, because his observations would make a bond with the coming century; but the developments of machinery and transport, the discoveries in biology and chemistry, and, lastly, the European war, have so far removed the Paris of the eighteenth century from the Paris of the twentieth century that no bond can be recognised. Read, however, as a lively description of Paris before and after the revolution, every page has its historical interest or its amusing reminiscence, while many lights are thrown on the medicine of the period as well as on the morals of society. It goes without saying that the experienced translators have done their work well; they have caught the spirit behind the book, and have appreciated the close and whimsical observation which has accompanied the putting together of a desultory commentary. The illustrations are well chosen and reproduced.

Paterson of Hebron: "The Hakim."

By W. EWING, M.C., D.D. London: James Clarke and Co., Ltd. 1930. Pp. 256. 8*s.* 6*d.*

THIS book will appeal to all interested in medical missions and to those members of the Egyptian Expeditionary Force who served in Palestine, many of whom knew Dr. Paterson. It is a tale of hard, and at times exciting, work as a mission doctor in one of the most fanatical strongholds of Mohammedism—work which did much to raise the prestige of Britain in that part of the Near East. It is evident from the story that Paterson gained the affections of a turbulent and hostile people by his personal courage no less than by his professional skill; a strong man appealed to them. Among the medical matters dealt with, the notes on syphilis may come as a surprise to those who do not know the East. Interesting and authoritative light is thrown on many of Palestine's post-war problems, political, racial, and social, and the book is worth reading from this aspect alone.

Stedman's Medical Dictionary.

Eleventh edition of "A Practical Medical Dictionary." By THOMAS LATHROP STEDMAN, A.M., M.D., Editor of the "Twentieth Century Practice of Medicine." London: Baillière, Tindall and Cox. 1930. Pp. 1222. 35*s.*

THE new edition of this dictionary contains evidence of the accelerated movement of medicine during the past two years. All medical dictionaries tend to become more encyclopædic as they grow older, and the eleventh edition of Stedman contains 22 plates, more than 200 tables, 400 figures in the text, an appendix of drugs with their doses and uses, and a list of microparasites pathogenic for man and certain animals with their morphological and cultural

distinctions. Yet the dictionary contains the individual characteristics with which Dr. Stedman has long made us familiar. One of his primary objects when he began his work in 1908 was the purification of medical orthography, and after two decades of patient efforts he feels that this end has been nearly attained. He was, for instance, always opposed to the dropping of the terminal "e" from alkaloidal titles, thus doing away with the convenient distinction between alkaloids and glucosides, and he has now had the pleasure of seeing American medical journals unostentatiously restoring the missing letter. Definitions of words recently introduced into the physics of radiology have been included in the dictionary in anticipation of their adoption into medicine. We have no doubt that Stedman's dictionary will long continue its useful career.

Surgical Diseases of the Thyroid Gland.

By E. M. EBERTS, M.D., Professor of Surgery, McGill University; R. R. FITZGERALD, M.D.; and P. G. SILVER, M.D. Philadelphia: Lea and Febiger. Pp. 238. $3.50.

THIS book in small compass presents the surgical aspect of the goitre question succinctly, accurately, and in an attractive and readable fashion. The account is founded upon the study of 700 patients who have passed through the goitre department of the Montreal General Hospital. It should be read by all surgeons interested in goitre.[1]

The Mystery and Lore of Monsters,

With Accounts of Some Giants, Dwarfs, and Prodigies.

By C. J. S. THOMPSON, M.B.E. London: Williams and Norgate, Ltd. 1930. Pp. 256. 15s.

IMAGINATION from the beginning of history has been inflamed by gruesome descriptions of monsters, human, semi-human, and utterly inhuman, whose existence on earth has been recorded. Throughout this long period the art of writing and, later, that of printing have inflamed wild beliefs in what purported to be accurate reports of the appearances and exploits of monsters, and the awe and credulity displayed by the intelligentzia at various epochs have never ceased to puzzle the intelligentzia of their successors. To-day there may be found an astonishing readiness among highly educated people to believe in the existence of creatures that are structurally impossible. So a book by the curator of the historical section of the Museum of the Royal College of Surgeons of England ought to make valuable reading for the public, while it may well supply for medical practitioners categorical answers to questions which their clients love to propound as to three-headed nightingales, super-athletic cripples, and frantic hybrids. The book ranges through the age of mythology—the satyrs, cyclops, and headless men; through the sixteenth century when some sinister results of included twins received particular notice; and so to the time when, in the first half of the eighteenth century, the systematic study of abnormal formations commenced with the work of Caspar Friedrich Wolff. Wolff classified roughly variations of growth distinguishing between the dicephalus, the pygopagus, and the craniopagus, and explained the anatomy and development of joined twins. The influence of classical and mediæval superstitions was not countered then, and has not ceased to play its part to-day, but on the whole our grandparents regarded as the mysterious whims of the Creator much that we now know to be manifestations of faulty physiology. A very interesting chapter deals with the celebrated examples of this phenomenon.

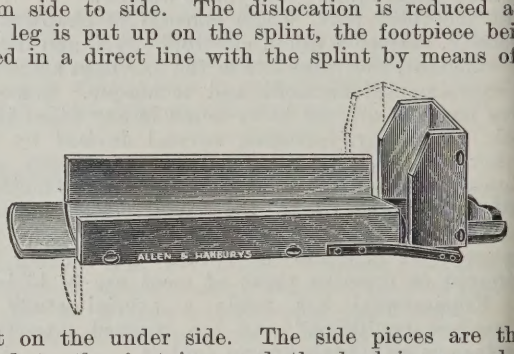
In the second part of the book the history of remarkable giants and dwarfs is fully set out and illustrated, and a large bibliography will enable the reader to pursue his studies along any line that appeals to his curiosity. As Sir D'Arcy Power says in an introductory note, this is a book which would have delighted the hearts of Samuel Pepys and Horace Walpole. It is true that the author's scientific accuracy goes far to explain away many picturesque stories, but his biographical notes will be found more interesting reading than ever were the mediæval legends with their patent incredibility. The book is very well illustrated, and in many libraries, scientific and otherwise, it should find a place as a work of reference.

[1] We regret that in a previous notice of this book one of the authors' names was misspelled.

NEW INVENTIONS

A NEW SPLINT.

THE illustration shows a new splint for Pott's fracture. It is a back splint, the lower end of which with attached footpiece, is capable of being moved from side to side. The dislocation is reduced and the leg is put up on the splint, the footpiece being fixed in a direct line with the splint by means of a



nut on the under side. The side pieces are then fixed to the footpiece and the heel is secured in position by cotton-wool padding. The side pieces are strapped together over the ankle-joint, further locking the heel. The nut is then loosened and pressure, exerted on the outer side of the movable portion by means of a spring acting along the outer side of the splint, maintains the complete reduction of the ankle-joint. The movable portion can be detached completely from the splint so that, when desired, the foot and leg can be put up in plaster-of-Paris without taking the leg off the splint. The splint can be used for either leg as the spring will fit on either side. The legpiece can be lengthened or shortened as desired, and the footpiece can be adjusted backwards or forwards on the movable portion. Detachable side splints are fixed to the leg-piece so as to anchor the leg firmly, thereby preventing twisting, and so making the pressure on the movable portion more effective. The nut securing the movable portion to the leg splint is made of wood so that clear X ray photographs can be obtained both anteroposteriorly and laterally, when the foot is fixed in position.

Messrs. Allen and Hanburys, Ltd., 48, Wigmore street, W., are the makers.

J. E. HEPPER, M.R.C.S., L.R.C.P. Lond.

THE LANCET.

LONDON: SATURDAY, DECEMBER 13, 1930.

BEIT FELLOWSHIPS.

THE death of Sir OTTO BEIT reminds us that the foundation of the fellowships for medical research which Sir OTTO established 20 years ago in memory of his elder brother was one of the conspicuous landmarks in the amazing progress which medical education and investigation have made in the twentieth century. Thirty years ago, if a young graduate wanted to devote himself to investigation in medicine or any of the medical sciences and keep himself alive, his path was by no means easy or assured. If he could get a teaching appointment his enthusiasm would probably make times and opportunities for research work, and many of the leaders of to-day could testify to the value of such an apprenticeship. But the number of teachers was limited and research scholarships for senior students were few and far between; there were the Grocers Company's scholarships in sanitary science, the John Lucas Walker studentship at Cambridge, the Radcliffe Travelling Fellowship at Oxford, and a few more plums which were eagerly sought after. All that is now changed; teaching posts are much more numerous and there are so many research scholarships in medicine and allied subjects that it is not always easy to find worthy recipients of all of them. The Beit benefaction marked the turn of the tide, and for the first time in this country the possibility of two or three or four years spent in research was open to more than a favoured or lucky few. The importance of this was two-fold. In the first place it gave a chance to the man with a clear faith and passion for investigation who had no money; somehow or other the best of these would generally survive and get what they wanted, but often enough by a very rough road which a Beit Fellowship made smooth and all the more productive. And in the second place the knowledge of the existence of such prizes has deflected the attention of many good men to the possibility of engaging in research, and a proportion of such have, on trial, found it to be their vocation. Looking back in recent years on the achievements and careers of those who have held his fellowships, Sir OTTO BEIT must have been very gratified at the results of his generosity. He had good cause. A few fellows have fallen by the wayside, a few have been choked with the cares of this life, but the majority have fruited well—professors, Fellows of the Royal Society, well-known investigators, a few clinicians. Under the loving care of Sir JAMES FOWLER—and who would not love a child with whose birth he had so much to do?—the trustees and their advisory committee have administered the foundation with singular success, adapting it wisely to the changing conditions which the Beit Fellowships themselves have done so much to alter. Research has now emerged as a profession, and there are senior fellowships with substantial emoluments for those who have proved worthy in the lower ranks. The intimate connexion between teaching and research is recognised by the fellows being allowed, even encouraged, to undertake a certain amount of undergraduate teaching in the schools in which they work—much to the benefit of all parties concerned. In one point only has the foundation failed—to get fellows of the right spirit who will work at real clinical medicine. And if anyone could tell them the solution of this troublesome problem, we are sure the trustees would do their best to adopt it.

RADIOLOGICAL DIAGNOSIS OF PLEURAL SYMPHYSIS.

IN the practice of artificial pneumothorax it is unfortunate that we have at our disposal no satisfactory preliminary method of determining whether the pleural space is free or limited by adhesions. The patient who has consented to this procedure and who is buoyed up by the hope that the method of treatment proposed will prove his salvation from lingering disease or early death will experience a severe disappointment if the induction fails. And though the disconcerted physician may with assumed cheerfulness refer to the event as one of minor importance and speak hopefully of "some other line of treatment" his assurances will seldom carry conviction. Thus, before an attempted induction of an artificial pneumothorax the patient should always be warned that success cannot be guaranteed. Physical signs or radiographic appearances may indeed provide arguments against the probability of a hopeful issue. In some cases a history of previous pleurisy may suggest that success is unlikely, in others preliminary radiograms may indicate the presence of fibrosis extending to and probably involving the pleura; or, without widespread pulmonary involvement, the parietal pleura may show evidence of thickening. But apart from experiment it is seldom possible to express a definite opinion as to the chances of success, and so long as the possibility of a fair measure of collapse remains the attempt should be made. For it sometimes happens that despite every indication of symphysis a free pleura will be found, and a lung which is apparently ensheathed in a thick and presumably universally adherent pleura will collapse uniformly at the first essay. Any evidence which throws a helpful light on the problem is thus of value and, despite the limited application of the tests proposed, a recent paper by E. SERGENT and J. VIBERT deserves attention.[1]

As these writers point out, a massive pulmonary fibrosis, whether due to tubercle, syphilis, widespread cancer of the lung, or

[1] Arch. Méd.-Chir. de l'Appareil Resp., 1930, v., 116.

pulmonary atelectasis and the partial collapse of the lung resulting from paralysis of the phrenic nerve, may, however produced, give similar appearances on the X ray film. Thus there will be opacity, often uniformly dense, involving the whole lung or one of its lobes on the affected side, displacement of the trachea and mediastinum, elevation of the diaphragm, and compensatory expansion of the opposite lung. In the differential diagnosis of the various conditions named it is necessary to distinguish between those in which there is a retractile sclerosis of the lung with involvement of the pleura and consequent symphysis of its layers and those in which there is no pulmonary fibrosis, no adherence of the pleura, for in the latter there is in many cases the prospect of a restoration of working capacity in the affected areas. In the examination of these cases it is important to note the static appearances as shown in radiograms, and to compare these with the moving pictures seen under the fluoroscopic screen.

In a typical case of retractile sclerosis and pleural symphysis the radiogram will show opacity of the lung fields, partial or total obliquity of the ribs, narrow intercostal spaces, the trachea drawn to the affected side and distorted in such way as to trace a sinuous course; in extreme cases even a well-marked S curve will be apparent. The diaphragm on the diseased side is elevated and its convexity is interrupted by small peaks or distorted by larger displacements. Examination under the fluoroscopic screen will show absolute or relative immobility of the affected side. If there is any movement it is of the slightest and tends to accentuate the diaphragmatic deformity, as the pleural adhesions responsible for the latter are dragged upon by attempted muscular contractions. On the healthy side the costal movements are exaggerated and the diaphragm gives strong "piston" thrusts. In atelectasis—whether due to a foreign body obstructing a bronchus, to stricture, malignant or innocent, or to post-operative causes—dullness of the affected lung and compensatory expansion of the healthy lung will also be seen. As in the previous group the mediastinum will be displaced towards the affected side and the diaphragm will be elevated, but certain striking differences are apparent. The diaphragmatic dome is smoothly rounded, there is no looping or tenting. Under the fluoroscopic screen, though diaphragmatic excursions may be limited, some movement is apparent. Further, the displaced trachea retains its normal direction, it remains straight, not sinuous. Obviously, if the atelectasis is the result of a foreign body or of a plug of mucus, complete restoration of the normal appearances will follow removal of the obstruction. When diaphragmatic elevation is due to paralysis of the phrenic nerve there can be no muscular contraction of the affected side, but in the absence of adhesions a see-saw movement may be observed under the screen, contraction and hence depression on the sound side being correlated with an upward movement on the diseased side. In this condition the intercostal muscles endeavour to compensate for diaphragmatic inertia by vigorous contractions.

THE PLAIN MAN AND THE EXPERT.

THE headmaster of Harrow has been praising medicine as an exact profession; for doctors, he says, base their diagnosis on a careful examination of all the factors in the case. This is pleasant hearing, of course, but scarcely true. Does any practitioner really give careful attention to all the factors affecting his patient? Certainly not; all he does is to note some of those outstanding in the light of his experience. If one of these cannot be neatly named, he calls in an expert to look at it more closely; but a complete examination of even one factor is never possible, because every factor is infinitely divisible until we reach the growing points of science. This inevitability of ignorance ought to be recognised for the good of the soul, but it is fortunately remote from the problems of everyday practice. Here a half-truth is much better than none at all, and everyone knows that patients ought to get much more benefit from the information already available. To justify Mr. NORWOOD'S description, the profession must make better use of its experts. As the tree of knowledge grows the practitioner more and more requires the helping hand of specialists who have climbed a little further up some particular branch. At the same time, with all this climbing, we must take care that nobody drops the patient.

Some of the dangers of specialism were well described by Dr. A. E. BARCLAY in his presidential address to the British Institute of Radiology last week, and printed on the first pages of this issue. He showed its bad effect on teaching and research and indicated the increasing difficulty of being anything more than a specialist within a specialty. But the problem of the expert and his uses is not confined to medicine alone; it is, indeed, an essential problem in government and most other branches of human endeavour. The time has come when ordinary people frankly admit their hopeless ignorance of gold standards and electricity, and most of the other fundamentals of civilised life, and there is a powerful tendency to let executive decisions rest with the men who understand these matters. The expert to-day, says Prof. HAROLD LASKI, is accustomed to a veneration not very different from that of the priest in primitive societies, for he exercises a mystery into which the uninitiated cannot enter. As professor of political science of the University of London, Mr. LASKI is chiefly concerned with this tendency as traceable in economic and social life, but his reflections in the December number of *Harper's Magazine* contain lessons which we may well apply to the work of our own profession. His main thesis is that the expert's opinion should never be final; decisions must ultimately rest with the amateur, "the plain man," who alone can give them coherence and proportion. For special knowledge and the highly trained mind produce their own limitations. The expert sacrifices the nicety of common sense to the intensity of his experience. He dislikes the appearance of novel views. He often fails to see his results in their proper perspective. He is apt to deny that truth can possibly be found outside

the borders of his own private caste, and is hostile to views not set out in terms he has been accustomed to handle. Specialism, says Prof. LASKI, seems to breed a horror of unwonted experiment and a weakness in achieving adaptability, both of which make the expert of dubious value when he is in supreme command of a situation. He tends to make his subject the measure of life instead of making life the measure of his subject, and the result is often a confusion of learning with wisdom. "The fixed person for the fixed duties (Prof. LASKI quotes Prof. WHITEHEAD), who in older societies was such a godsend, in the future will be a public danger." Prof. LASKI would argue that the more expert such fixed persons are, the more dangerous they are likely to be. The wisdom needed for the direction of affairs is not expert technique but a balanced equilibrium. It consists not in the possession of specialised knowledge but in power to utilise its results at the right moment and in the right direction.

The plain man, in medicine, is the general practitioner. The specialist may think him an unskilled amateur, and the practitioner may be fully aware of his limitations; but he retains executive command of his cases for much the same reason as inexpert Cabinet Ministers retain command of their departments. If this is right and wise—and that is a fair deduction from Prof. LASKI'S words—let us frankly confess it and train men properly to undertake executive work and not something quite different. "A very broad basis of education," Dr. BARCLAY says truly, "is essential for critical appreciation of specialised knowledge," but the present plan of instruction is nothing so much as a scramble among teaching departments—the winner being allowed to inflict as much information as he can get into the time. Dr. BARCLAY is right in saying that the student could be just as adequately prepared for his life's work in a far shorter period, and he is right again in pointing the way to this end. *Eliminate all technique*, he says, except for those who intend to specialise. Reduce the student's burden by placing the common good before departmental interest. But, above all, he might have added, remember that nothing is to be gained by trying to turn the executive practitioner—the plain man—into an incompetent expert in every division of medicine.

WOUNDS AND MAGGOTS.

INDIVIDUAL surgeons learned much during the late war about the treatment of the infected wound; there was then enough material to test and evaluate different methods almost with laboratory exactitude. Such experience no longer falls to the lot of any one surgeon, although there must be a large total of heavily infected wounds scattered over the hospitals of the country. There may now be a certain danger that through lack of equipment or of imagination some of the lessons of the war may not be applied. Primary suture of gun-shot wounds, after excision of damaged tissue, was proved to be safe within a period of six to eight hours after receipt of injury, and the same holds good for motoring and other accidents, most of which receive attention within that period of time. In a number of cases primary suture fails or is impracticable and the result is an infected wound. Recently certain interesting views have been advanced concerning the treatment of such wounds, particularly when complicated with fracture of bones. Mr. A. J. WALTON has been led to regard[1] extensive surgical procedures for the treatment of sepsis as wrong; it is now, he says, his custom to wait until the sepsis becomes localised and then to deal with the focus. Dr. H. W. ORR, of Nebraska, advocates[3] treating compound fractures in a plaster cast, to insure absolute rest to the injured limb, the wound being dressed with vaseline gauze which is allowed to remain undisturbed. Dr. LORENZ BÖHLER, drawing on his experience at an accident hospital in Vienna, while agreeing in the prime importance of absolute and continued rest, prefers to leave the wound exposed to the air with formation of a protective scab to form.

Neither of these methods, however, successful as each undoubtedly may be, constituted a quick way of converting a septic wound into a clean granulating one in which secondary suture, if required, can be performed. Of the methods which have been devised to achieve this result the best known is that of Carrel and Dakin; but Dakin's solution probably achieves its results by virtue of its proteolytic power, owing to which the wound is freed of all dead tissue and therefore of microbes. Mr. E. G SLESINGER pointed out again at a recent discussion[2] that in Nature a similar result is achieved by the growth of fly maggots in an infected wound. During the war it was a common observation that the men who had lain for many hours or days in front of the lines, and whose wounds were heavily infected with maggots, often did surprisingly well. Maggots deliberately planted into a wound, provided they are kept from encroaching on the skin by a wire gauze cage fixed with plasticine, will clear an infected wound of dead tissue within four or five days. At the end of that time, if the maggots are demobilised by chloroform vapour and gently scraped away, a wound is left covered with small healthy granulations, beneath a layer of mucoid slime which can be picked off the surface with forceps. Whatever æsthetic objections may be felt to such a treatment, it is found in practice that the maggots can be introduced without the knowledge of the patient, and provided they are kept from the skin surface he is not conscious of their presence. This artificial myiasis does, in fact, offer a method equivalent to surgical débridement but applicable to the heavily infected wound, and capable of cleaning a complicated area which could not be dealt with by surgical means. Dr. W. S. BAER, of Johns Hopkins, has used the method in the treatment of osteomyelitis, septic sinuses, and such conditions with satisfactory results for over two years, and it would seem that, as an adjunct to the treatment of septic wounds, maggots are worthy of the serious attention of surgeons.

[1] THE LANCET, Nov. 15th, p. 1073. [2] Ibid., Dec. 6th, p. 1238. [3] Jour. Bone and Joint Surg., 1928, x., 605.

ANNOTATIONS

THE COMMISSION ON NURSING.

THE first meeting of the members of the Commission was held on Monday last in the Office of THE LANCET, when Lord Crawford presided over a full attendance. The terms of reference were explained and the first directions of the work, as defined by those terms, were settled. The favourable reception of the inquiry by the general and medical press was reported, and the attention of the meeting was drawn to certain of the many communications which had been received. It was announced that the inquiry would be pursued in all representative centres, and it is hoped to secure coöperation and to collect information on the various problems involved.

Any organisation or individual wishing to provide evidence for the Commission to consider, or to make proposals relating to the improvement of conditions of service of the nursing profession, is asked to communicate with the hon. secretary at THE LANCET Offices, 7, Adam-street, Adelphi, London, W.C.

INTRACRANIAL INJURY DURING BIRTH.

A RECENT meeting of the Massachusetts Medical Society[1] was devoted to the effect on the nervous system of injury during birth. As an obstetrician Dr. F. C. Irving frankly resented the common assumption that intracranial hæmorrhage is due to bad obstetrics. The cardinal sign of intracranial hæmorrhage, he says, is disturbance of respiration, the later signs being apathy, refusal to suck, pallor, and a tense fontanelle. At the Boston Lying-in Hospital of 182 autopsies from all causes, 73 (40 per cent.) revealed intracranial hæmorrhage as the cause of death. In 23 of these cases labour had been normal; 23 were delivered by the breech, 21 with forceps, and 3 by Cæsarean section. These figures suggest that no particular obstetric procedure is especially responsible. Dr. Irving maintains that asphyxia is a true cause of hæmorrhage, even in the absence of trauma, and infants showing signs of intra-uterine asphyxia can sometimes be saved, he believes, by Cæsarean section.

Dr. Donald Munro gave further details of his series of 117 cases of cranial and intracranial injuries (THE LANCET, 1929, i., 31). In no less than 54 of these the infants were first-born. Cerebral œdema without macroscopic hæmorrhage was a common and significant finding, and microscopic examination usually showed some associated intracortical hæmorrhage. On further analysis of his series Dr. Munro finds that the most frequent symptoms were hypertonicity, abnormal or poor cry, cyanosis, and failure to nurse; tense fontanelle was slightly less common. Hypertonicity was relatively frequent in the cases which survived, and cyanosis in those which died. Less common symptoms, which were associated with high mortality, were flaccidity and pallor, often with apathy and failure to suck; in these cases the pressure of the cerebro-spinal fluid was below normal. These symptoms are indicative of surgical shock, and occur typically with gross meningeal damage. In the absence of surgical shock all cases with cerebral œdema or hæmorrhage showed increased intracranial pressure. Dr. Munro recommends no active treatment during the stage of surgical shock, except possibly rectal magnesium sulphate. When surgical shock is absent, the rise of intracranial pressure should be combated by repeated lumbar puncture, unless there is evidence of hæmorrhagic disease, in which case the bleeding and clotting times should first be brought to normal.

Dr. Randolph Byers recognises two types of nervous lesions in infants: (1) due to strain on supporting structures with rupture of the vessels which they contain, as described by Eardley Holland; and (2) small intracerebral hæmorrhages as described by P. Schwartz. Both types are common. His series of 12 cases illustrating the variety of situations of birth trauma deserves detailed study. Some of them lend confirmation to the work of Crothers and Putnam on spinal trauma in breech deliveries; in one case he is able to demonstrate the morbid anatomy of this condition in a child which died of intercurrent disease in the fourth month. In most of his cases of intracranial hæmorrhage the bleeding was considered to be mainly intracerebral, especial attention being paid to cases of this kind in which hyperkinesis subsequently developed, and in which it is suggested that the lesions involved the basal ganglia. Dr. Byers is in general inclined to attribute the pathogenesis of cerebral lesions met with in childhood to natal rather than prenatal causes.

A paper by Dr. G. B. Fleming and Dr. Ellen Morton,[2] of the Royal Maternity Hospital, Glasgow, can usefully be compared with those read at the Massachusetts Medical Society. They take the view that the clinical signs of cranial hæmorrhage are unconvincing, and that the most reliable evidence during life is obtained from the presence of a xanthochromatic spinal fluid. They think, however, that *intracerebral* hæmorrhage is rare, and they infer from the presence of xanthochromatic fluid that the hæmorrhage is meningeal—an assumption hardly supported by sufficient evidence. An account is given of 103 infants suffering from intracranial hæmorrhage, of whom 50 died before discharge and 7 subsequently. The duration of labour showed no significant relation to the mortality, but labour was abnormal in 50 per cent. of the cases, as against 27 per cent. of all women delivered in the hospital. In the fatal cases tentorial tears were the commonest lesions, being found in 16 out of 39 autopsies. Of the non-fatal cases 33 were examined after they had passed the first year, and only 5 of these were suffering from any defect.

INTESTINAL FLORA.

THE bacteriology of the more accessible parts of the alimentary canal has long been studied and recently intubation has made it possible to take cultures from the gastric and duodenal fasting contents. But, apart from operation and autopsy, the nature of the flora lower down has only been deduced from examination of the fæces, and in clinical work this has many fallacies. Certain bacteria, such as those of the typhoid group, are known to cause disease; but of the hosts of other inhabitants of the intestinal tract it is hard to say which are real parasites and which are of no pathogenic significance. Moreover, owing to drying in the colon many bacteria are dead before the fæces are voided. The Einhorn method of intubation which was introduced for therapeutic purposes offers new means of taking

[1] New Eng. Jour. Med., Sept. 11th, p. 499.

[2] Arch. Dis. in Childhood, October, 1930, p. 361.

samples of intestinal flora at various levels. The perforated end of the fine rubber tube swallowed by the patient is sealed in collodion sacs so that no fluid can enter until the end is in the situation required, as determined by the length of tube paid out, controlled by X rays to preclude the tube being coiled on itself. The collodion sac is burst by blowing a little sterile salt solution through the tube, and a sample of intestinal contents is sucked in. The tube may now be washed through with iodine and sterile salt solution and withdrawn to a higher position in the alimentary canal where a further sample is obtained. In an investigation just recorded[1] patients with high gastric acidity were found to have low duodenal bacterial counts, whereas in those with low acidity duodenal counts were high. A series of arthritic cases showed in the main a fermentative flora with *Streptococcus viridans* present in all parts. The patients with enteritis and cholecystitis had a putrefactive intestinal flora. The bacteria in the throat, stomach, duodenum, and intestine varied greatly in the same patient.

[1] Thomson, A. E., Einhorn, M., and Coleman, W.: Med. Jour. and Record, Nov. 5th, p. 417.

POST-OPERATIVE PLASTIC SURGERY.

AT a meeting of the Section of Laryngology of the Royal Society of Medicine on Dec. 5th, Mr. E. Musgrave Woodman made a communication on plastic repair after operations on the upper jaw. In planning the original operation, he said, there are certain points which tend to prevent or minimise deformity, and it is an advantage when the surgeon who performs the first operation is also able to undertake any plastic procedures which may be required later. The old transverse incision below the eyelid must be relinquished, for it is often followed by unsightly baggy swelling of the lid; Trotter's incision through the inferior fornix of the eye may be used, but Mr. Woodman prefers to begin his incision in the eyebrow and extend it down the side of the nose. To prevent dropping of the eye-ball, the infra-orbital margin of bone should be retained if possible; failing this, the suspensory ligament should be left. Perforation of the palate is not regarded as a deformity; on the contrary, such an opening should be left in every case for proper inspection of the operation area. This opening is controlled by a denture, held in position by two soft rubber processes which project into the aperture. Indeed, skilled dental assistance is of great value; a temporary plate can be made and fitted a few hours after operation, keeping the dressings in the cavity clean and enabling the patient to eat and swallow easily. A stent attached to the plate can be used to fill out the hollow left by removal of bone; and when a large hole in the face remains, unsuitable for repair by plastic operation, a vulcanite shield can be attached to the plate to fill the gap and painted to match the skin of the face. Mr. Woodman illustrated his paper by photographs showing methods of repair by means of forehead flaps and of tube-grafts taken from the chest. In a second communication Mr. Lionel Colledge dealt with the repair of pharyngeal defects after operation for removal of malignant tumour. Such openings usually occur as a complication after total laryngectomy and lateral pharyngotomy; they may be accidental, the result of wound-infection, or they may be produced deliberately, when so much of the pharyngeal wall has been excised that it cannot be closed securely, and is advised when X rays have been used on the pharynx. In closing these pharyngostomes it is useless to slide a single flap across the opening, having an inner raw surface exposed to contamination; the gap should be closed by a double layer of tissue which presents a lining of skin or mucous membrane facing inwards and of skin facing outwards. Skin flaps are dissected up and turned inwards to reconstruct the tube; this leaves a large raw surface which is covered by a flap taken from the loose skin below the horizontal ramus of the lower jaw and rotated into position. Four patients were shown to illustrate Mr. Colledge's paper.

In the discussion of these papers the opinion was expressed that recent advances in plastic surgery permitted operation on more extensive tumours than formerly, with the prospect of leaving the patients in a tolerable condition. The growth of hair upon the inturned skin flaps was inclined to be troublesome in the nose and mouth as well as in the pharynx; X rays were not considered reliable in preventing this, and in a recent case Mr. Colledge had had all the hair follicles epilated by diathermy before the plastic operation.

THE WIDAL TEST AGAIN.

THE exaggerated claims sometimes made for this test and the sweeping condemnations to which it is also subject have prompted Major J. A. Manifold, R.A.M.C., to estimate its value in more accurate terms.[1] In his attack upon the subject from the point of view of diagnosis of the enteric group and differential diagnosis of the paratyphoids, Dr. Manifold has a wealth of accurate data to draw upon. His first favourable circumstance lies in the existence of an ideal experimental animal—the soldier, white or native, of the Indian army who willingly reports sick within the first week of disease and thereafter submits to as many tests as are required to establish bacteriological and serological diagnosis. The results thus gathered are comparable owing to the second favourable factor which is the uniform standardised technique used in the army laboratories in India. Prof. Dreyer's methods are followed by workers all similarly trained, and so the conditions for optimum results are fulfilled. Dr. Manifold was able to analyse 227 bacteriologically proven cases of enteric fever, of which 152 were due to *B. typhosus*. When on an average 4·39 tests per case had been done 64 per cent. of these would have been diagnosed and classified on their serum tests alone. If the group is subdivided, of 84 severe cases, 75 per cent. could have been diagnosed, of 68 mild cases 50 per cent., and of 24 very mild ones only 37·5 per cent. would have been detected. As an instance of these mild infections Dr. Manifold mentions patients who have been admitted to hospital for an unknown pyrexia, a blood culture made, the patient discharged as well, and readmitted a few days later when results of the culture became known. It is interesting to compare the figure for the whole group 64 per cent. with A. Pijper's 60 per cent. in bacteriologically proven cases. The former is the result of 4·39 tests per case, the latter the finding at the first examination and of course points only to enteric group. The number of complete failures is about the same. Dr. Manifold reaches the conclusions that no serological test can replace careful, repeated bacteriological examinations; that in average severe cases, the Widal, practised with Dreyer's cultures and manipulations, remains a valuable aid to differential diagnosis; and

[1] Jour. R.A.M.C., June–August, 1930.

that the chief field of usefulness for Felix "O" suspension may lie in the detection of mild and abortive cases if experience proves it to be a sensitive indicator in this particular group. Concerning the fluctuation of group agglutinins he dissents from accepted teaching on the subject. With these conclusions all will agree but the civilian practitioner will no doubt protest, as Dr. Manifold has anticipated, that his patient will not only refuse to put up with four or five vein punctures during 30 days of disease, but also he can seldom afford it. Felix's improvement on the test which claims greater certainty in achieving all objects by even one examination than does the old method in five, deserves to be tested as completely, and one hopes that Dr. Manifold will direct that this be done in his vast laboratory.

VACCINE TREATMENT OF WHOOPING-COUGH.

THE high mortality from whooping-cough reported in many parts of Western Europe, especially during the last few years, has stimulated search for remedies. Among those recommended are injection of ether, exposure to ultra-violet light or to X rays, and a great variety of drugs, of which luminal appears to be the latest. At the same time interest has revived in the possibility of vaccine treatment. In introducing this subject Dr. Philipp Leitner[1] points out that early diagnosis is essential whatever the treatment employed. He lays it down as a principle that when a child with a cough, free from fever, without catarrhal symptoms or evidence of inflammation (such as otitis, furunculosis, or pyuria), and with no enlargement of liver and spleen (such as would suggest, for example, leukæmia or malaria), has a leucocyte count of over 12,000 per c.mm., then that child has whooping-cough. The diagnosis is strengthened if the white cell count is still higher on being repeated after two to three days. This method of diagnosis, according to Leitner, helps to exclude enlarged bronchial glands and spasmophilia as the cause of a spasmodic cough. His own experiences with the use of vaccine in treatment are limited to 20 cases, but these he studied in some detail. He employed a highly concentrated vaccine specially prepared from Bordet-Gengou bacilli grown on blood-agar and killed with carbolic acid. This vaccine was supplied in phials containing 3, 4, 6, and 8 thousand million organisms per c.cm. and was usually given in six doses at two to three day intervals, each of the first four doses being 1 c.cm. of the strengths mentioned and the last two obtained by combining the solutions supplied to give 9 and 12 thousand million organisms respectively. After the first two injections the number of coughing attacks was considerably lessened and individual attacks were shorter in duration and less severe. Local reactions were never seen after the early smaller subcutaneous injections, and even after the later larger injections, which were given intramuscularly, no serious troubles were experienced except in one case where a slight inflammatory infiltration occurred at the site of injection together with a generalised eruption of roseolar type. In this case, however, as in all the others, favourable results were obtained. Even in quite small infants not only were the large doses of vaccine well borne but the usual period of duration of whooping-cough was curtailed. This was obvious after four injections, but in three older children after four doses of vaccine there was a slight relapse which was promptly cut short by the usual fifth and sixth dose. Other auxiliary methods of treatment may be combined with the vaccine in these cases, but in Leitner's opinion the short duration of the disease, 10 to 14 days, under the influence of the concentrated vaccine makes drugs unnecessary, although in several cases he gave luminal during the night. Four cases in which the treatment was not begun until the disease was well established were benefited by the vaccine, but the illness was not noticeably shortened.

[1] Jahrb. f. Kinderh., November, 1930, p. 343.

DOUBTFUL GROWTHS OF THE BLADDER.

MALIGNANT growths of the bladder have always presented many difficulties to the surgeon, and their proper treatment is still uncertain. This was evident in the discussion on the presidential address with which Mr. Sydney Macdonald opened the present session of the Section of Urology of the Royal Society of Medicine.[1] His title was Results of Partial Resection of the Bladder for Carcinoma, but he found occasion to consider the treatment of other growths as well. Incidentally, he pointed out that their scientific classification is by no means easy, since many which clinically seem innocent are shown by microscopic section to be malignant, and vice versa. He himself, as a working rule, divides growths roughly into three groups: those probably benign, those certainly malignant, and those doubtful. Of all methods of treatment he prefers resection, and he uses diathermy only for growths appearing innocent and small in size. Speaking of those which are certainly malignant he said that he had notes of 120 cases, of which only 35 were operable when they first came for examination. The large number of inoperable cases was very striking, and since most of the records came from his private practice and did not include cases seen in his out-patients' department, the percentage of inoperable cases was even higher than these figures indicated. Among 44 patients who submitted to partial resection of the bladder, and of whom nine could not be traced, six died in the nursing home or hospital as the result of the operation. Of those who survived operation, 15 died within the next three years, leaving 14 alive and well after that period, or 31·8 per cent. of those operated on. Mr. Macdonald concluded his address by inviting opinion about the best method of treatment of growths of doubtful nature, and the speakers who followed were divided into two groups—those who considered that diathermy was a useful alternative to resection in the treatment of growths not obviously malignant, and those who insisted on excision. Mr. Ralph Thomson was strongly inclined to extirpation with the knife. Although he did not go so far as to say that diathermy may not be useful, he thought that three-quarters of the surgeons who use diathermy are not expert bladder operators. One of the chief disadvantages of diathermy treatment was that a vast amount of tolerance on the part of the patient is required for success. Mr. Jocelyn Swan agreed that diathermy should only be used for small and unmistakable papillomata. Mr. Zachary Cope and Mr. F. M. Loughnane, however, were both disposed to think that the scope of diathermy is greater than previous speakers indicated, and Mr. E. W. Riches quoted two cases of inoperable growth in which palliative treatment by diathermy was followed by comparatively good results. In reading the report of discussion, it is interesting to note that treatment by deep X rays and by radium received little notice. Mr. Macdonald recommended X ray therapy as a prophylactic measure

[1] Proc. Roy. Soc. Med., 1930.

after the excision of a malignant growth, and Mr. Zachary Cope quoted a case of malignant bladder improved by diathermy followed by insertion of radium. It must be borne in mind, however, that the discussion was primarily one on resection of the bladder and on the treatment of growths of doubtful nature. Had carcinoma been under consideration it is probable that more would have been said of ray therapy.

FOG PANIC ON THE MEUSE.

LAST week the first cold snap of winter brought with it the customary blanket of fog over the North Sea and neighbouring coast lands. Sea passages were slow and dangerous, communications were held up, and the depressing effect on the lives of aging persons will soon be manifest in the weekly returns. But something more than this occurred in the valley of the Meuse above Liége. At Engis and several other villages on the river level a number of deaths occurred among men and animals which were so grouped and so rapid as to give rise to something of a panic. Other agencies than those of fog and cold were brought in to explain the 64 deaths within so small an area. There was talk of poisonous fumes from local factories kept down by the fog bank, and of some deadly local epidemic; even wilder thoughts were current in the villages. Local anxiety was such that the inhabitants barricaded themselves and their domestic animals into their houses. When the fog lifted saner counsels prevailed, and a local inquiry at Engis last Sunday came to the conclusion that fog alone was sufficient cause of the deaths and that noxious gases were in no way connected with the occurrence. Our own Ministry of Health has received an assurance from the Belgian health authorities that the deaths were not due to any communicable disease. Inquiry is still proceeding, but it has been ascertained that the victims for the most part were old or feeble, and that, of the five deaths in one commune, two were suffering from heart disease, one from tuberculosis, one from asthma, and the fifth from obesity. Post-mortem examination of cattle has shown pulmonary œdema and nothing more.

Without anticipating the findings of the Commission of Inquiry, it may be recalled that the Meuse valley at that point is deep and sheltered, and that cold air settles in the bottom of such a valley, producing conditions of rigour which are known little or not at all in wider valleys such as those of Thames and Clyde. In this country there is scant evidence that fog itself has appreciable effect on the respiratory death-rate, but if the fog is associated with a low temperature the effect on the adult death-rate makes itself evident at once. The bad February of 1880, when hoar-frost, low temperature, and fog figured in the Greenwich records, witnessed a sharp rise in the death-rate in the St. Pancras and Islington area. The factors are discriminated in a careful analysis of the figures for the two London boroughs over a period of 27 years made by Mr. W. T. Russell at the National Institute for Medical Research and published in our columns.[1] Of the two factors of cold and fogginess, the former was definitely shown to exercise the greater influence. Knowing the temperature and the amount of fog Mr. Russell was able to predict (within a marginal error of 30 per cent. or so) the mortality from respiratory disease for the succeeding week. The late Dr. J. B. Russell, health officer for Glasgow, used to maintain that during the winter every city is in danger of a catastrophe if a combination of frost, fog, and still air occurs for days together. It seems that these conditions united on the Meuse to produce so terrifying a situation last week.

[1] THE LANCET, 1924, ii., 335; and 1928, i., 539.

MEDICAL USES OF RADIUM.

THE summary of results of research on radium during 1929 [1] continues the series published annually by the Medical Research Council, and is arranged more conveniently than its predecessors. It gives a rather full account of the treatment of œsophageal and rectal growths, about which there is as yet no general agreement. The methods of radium application for cancer of the cervix, breast, and tongue are by now almost standardised, the techniques of the various schools differing only in details such as quantity and time. Growths in the œsophagus and rectum, however, are difficult of access, highly resistant to radium, often complicated by bacterial infection, while damage to the surrounding tissues may be a serious feature in irradiation treatment. There is now general agreement that cases of idiosyncrasy to radium are encountered from time to time, but another question that has often been asked still meets with no definite reply: "Can radium ever stimulate malignant tissue to more active growth?" In one of the cases of mammary carcinoma reported by the Middlesex Hospital it is suggested that the progress of the disease was accelerated by the treatment. The woman's history is given in full, with two microphotographs. It is impossible to say whether the evil effect was due to the opening up of fresh channels by the needles or to the action of the rays, either on the malignant cells themselves or on the surrounding tissues of the host. The answer to this question is obviously one of the very first importance for radium therapy.

The techniques under trial for œsophageal carcinoma at the Middlesex Hospital are as follows. For four cases of post-cricoid growth the radium was inserted on or in the prevertebral muscles and against the side of the gullet in eight or ten 2·2 cm. needles each containing 0·5 mg. of radium element. They were left in for a week or ten days. Twelve cases were treated by intra-œsophageal application, either with a special silver radon applicator like a Souttar's tube or else by means of Muir's seeds on a Souttar's tube. Four more cases were treated by thoracotomy, radon seeds being inserted sub-pleurally after collapse of the lung. At St. Bartholomew's Hospital some progress has been achieved by exposing the lumen to needles applied on a Symond's tube. The opinion at Birmingham is that the external approach is only favourable when the growth is either in the neck or the lower part of the thorax. The operation is risky, in contrast to the intra-œsophageal approach, which has shown no immediate mortality.

For the rectum St. Bartholomew's Hospital prefers radium needles; in very advanced cases relief has been obtained by radon seeds inserted through the peritoneum, the anus, or the peri-anal skin, sometimes combined with posterior barrage. The Middlesex Hospital reports partial success with buried radium, without any operation. St. Mark's Hospital comments on the contrast between the satisfactory results of radium treatment of squamous

[1] Special Report Series No. 150. London: H.M. Stationery Office, Kingsway, W.C.2. Pp. 32. 9*d*.

carcinoma and the variable response of columnar-celled tumours. The Birmingham report stresses the value of colostomy, both for its therapeutic effect and for the possibility it affords of recognising hepatic metastases. Irradiation has been given chiefly by perineal puncture and needles, but the coccyx has also been removed to expose high growths.

A SURVEY OF PSITTACOSIS.

THE collection into one official handbook[1] of the results of recent research on psittacosis, much of which was originally recorded in our columns, will be a convenience to future workers. The history, clinical aspects, and pathology of the disease have been dealt with by Dr. S. Levy Simpson. Experimental observation on the ætiology are described by Dr. S. P. Bedson and Dr. G. T. Western, while Dr. Mervyn Gordon gives an account of virus studies in relation to psittacosis. Dr. G. L. Sturdee and Dr. W. M. Scott, medical officers of the Ministry of Health, have woven the whole into a connected story, contributing an introduction giving a brief account of the events leading to the present interest in psittacosis, and a considered review of the epidemiology as at present ascertained. The administrative action taken in this and other countries to control or prohibit the importation of birds of the group known as psittaciformes is also set out, while appendices include statistical tables, full notes on typical cases, and suggestions for the transport and keeping of birds. The fact seems to be established that the causal agent of psittacosis is a filtrable virus, associated constantly with the presence of a minute cocco-bacillary body. The possibility of producing an active immunity by means of a formolised vaccine is being considered, the one experiment on these lines which has so far been carried out having given encouraging results.

THE NEW MERCURIAL DIURETICS.

THE value of Novasurol and Salyrgan was discussed at a meeting of the Section of Therapeutics of the Royal Society of Medicine on Dec. 9th, when Dr. Philip Hamill presided. Dr. Evan Bedford and Prof. F. R. Fraser were able to testify to the efficacy of novasurol as a diuretic, but Dr. Strickland Goodall thought that the reduction of œdema after its use is due to loss of fluid by way of the alimentary canal. Often, he said, this drug produces a severe toxic diarrhœa, and he handed round two specimens showing sections of gut in which the mucous membrane was inflamed and sloughing as a result of the exhibition of novasurol. Dr. Bedford, however, was able to give a reassuring account of salyrgan, which he had first begun to use 18 months ago, and which he regarded as considerably less toxic than novasurol. His method is to give 2 c.cm. of the 10 per cent. solution diluted with 10 c.cm. of sterile saline, by intravenous injection; in this dilution he has never seen thrombosis of the vein following the introduction of the drug. In his opinion, it is unnecessary to stop digitalisation while salyrgan is being given, and he always accompanies the treatment with grs. 15 of ammonium chloride given by mouth three times daily to aid the diuretic action. Fluids should be restricted to daily intake of ℥xx. to ℥xxx. Using this technique, among 27 cases of cardiac failure with œdema he has only had three failures, and the three patients in question were moribund at the beginning of treatment. He quoted several of his cases in which the diuresis following salyrgan was marked; some of them lost 40 lb. or more in weight in a month. So far, he said, no toxic effects have been observed, but he thinks the chief value of the remedy is in cases of cardiac œdema. Though it is supposed to act by diminishing the affinity of the tissue colloids for water and sodium chloride, there is some evidence that salyrgan also has a direct action on the kidney, and for that reason its use is less desirable in œdema due to nephritis. While none of the other speakers could produce quite such dramatic results as Dr. Bedford, several were able to quote cases where salyrgan had promoted diuresis and reduced the œdema in cardiac cases. Dr. D. H. Kotthoff, of Vienna, stated that many good results had followed its use among cardiac cases in Austria. It was agreed by the majority that both novasurol and salyrgan should be avoided in œdema of renal origin; but Dr. Izod Bennett held that, although they are dangerous where the kidney is seriously injured, in cases which show gross pitting œdema with a normal blood pressure and blood-urea, salyrgan may be useful and is probably safe. Dr. Kotthoff shared this view. The use of salyrgan in the diagnosis of Ménière's disease was mentioned by Sir James Dundas-Grant and Dr. Warren Crowe; there is some evidence, Dr. Crowe said, that people with Ménière's disease have a mild degree of water retention, and that they react differently from normal persons on being given water and salyrgan together. The ultimate value of treatment by novasurol and salyrgan was discussed pessimistically by Prof. Fraser, who considered that those patients with heart failure serious enough to merit the treatment were so much wrecked in health as to profit little by the disappearance of œdema. Dr. Bedford, while sympathising to some extent with Dr. Fraser's view, pointed out that the patients themselves place a high value on their increased comfort, even to the extent of attending regularly at the out-patient department for a weekly injection of salyrgan.

[1] Reports on Public Health and Medical Subjects, Ministry of Health, No. 61. 1930. London: H.M. Stationery Office. Pp. 132. 2s. 6d.

POOR-LAW ACCOMMODATION IN BUCKS.—It is officially stated that no accommodation exists in any of the poor-law institutions in Buckinghamshire for cases requiring surgical treatment. Arrangements for the treatment of such cases have, therefore, been made with the Northampton General Hospital, the Royal Bucks Hospital, Aylesbury, and the King Edward VII. Hospital, Windsor. The charge for poor-law in-patients will be 10s. 6d. per day per patient; poor-law out-patients will be treated at a charge of 15s. per head for each course of treatment not exceeding 12 months.

CONSOLIDATION OF PUBLIC HEALTH LEGISLATION.—In pursuance of the policy of consolidating the various statutes regulating the work of the Ministry of Health, a committee has been appointed with the following terms of reference: "With a view to the consolidation of the enactments applying to England and Wales (exclusive of London) and dealing with (*a*) local authorities and local government, and (*b*) matters relating to the public health, to consider under what heads these enactments should be grouped in consolidating legislation, and what amendments of the existing law are desirable for facilitating consolidation and securing simplicity, uniformity, and conciseness." The chairman of the committee is Lord Chelmsford, and its other members: Mr. L. S. Brass, Mr. H. J. Comyns, Capt. Ernest Evans, M.P., Sir William M. Graham-Harrison, K.C., Sir Frederick F. Liddell, K.C., Major J. J. Llewellin, M.P., Mr. E. J. Maude, Major J. Milner, M.P., Mr. Cecil Oakes, LL.M., Sir Harry G. Pritchard, Mr. L. A. J. Granville Ram, Mr. C. E. Staddon, Lieut.-Colonel Sir Seymour Williams, and Mr. R. S. King-Farlow, of the Ministry of Health, as secretary.

CLINICAL INTERPRETATION OF AIDS TO DIAGNOSIS

A Series of Special Articles, contributed by invitation.

LXXXVIII.—BACTERIOLOGICAL EXAMINATION OF WATER.

PART I.*—Objects of the Examination.

THE main object of the bacteriological examination of water is to determine whether it has been subjected to fæcal contamination, and, whether in consequence, there has been distribution to the area of supply of various disease-producing organisms, such as those of enteric fevers (typhoid, paratyphoid), dysentery, and cholera. There is, however, another factor which is of some importance. Bacteria flourish best in water which contains organic impurities, and therefore a bacterial count may give important indications as to the amount of these impurities. If this amount is considerable, the water becomes a more favourable medium for bacterial growth and if, by chance, water in this condition becomes contaminated with fæcal organisms, and particularly with disease-producing ones, their growth will be more active and their multiplication considerable; whereas if the content of the water in organic impurities is low, or, in other words, the bacterial content low, the chances of these disease-producing organisms multiplying will be considerably lessened, and the risk of infection correspondingly lowered. Systematic examination of the water helps considerably in dealing with any defects, and thus keeping the water at what we might call "the minimum point of risk"—i.e., in such a condition that the disease-producing bacteria, if they gain access, have little chance of surviving, or, at any rate, of multiplying.

The available food-supply—i.e., the amount of organic matter—is, therefore, of considerable importance. The more food, the greater the number of organisms in the water. Those which develop at 20° C. —on the gelatin plate—are mostly non-pathogenic to human beings, but they cannot be ignored, for they indicate the amount of food material available for the pathogenic bacteria, and the amount of extraneous matter which has gained access to the water. This bacterial count will be greater during the dusty months of the year and after heavy rainfall, and, in consequence, too much importance must not be attached to it. Temperature, light, acidity, all play a part. But the available food-supply is not the only factor. The effect of temperature varies with the amount of organic matter present. A rise of temperature favours bacterial growth and this is especially the case if the water contains an ample food-supply. On the other hand, when organic matter is small in quantity the rise of temperature actually causes a diminution in the number of organisms. The regular knowledge, therefore, of the total bacterial count of a water-supply is a very important indication to the water engineer or the medical officer, not merely as to the immediate purity of the supply, but as to the capability of the water to deal with a chance contamination with disease-producing organisms. Epidemic disease from a water-supply is, it is true, a rare occurrence, but this does not prove that contamination with disease-producing bacteria is also uncommon. It may be that these organisms occur more commonly than we think, but if the water-supply is a really satisfactory one, then their death or their difficulty in multiplying may save us from an epidemic. For this reason it seems very desirable that we should know quite regularly the capacity of the water to allow the reproduction of bacterial life.

Epidemic disease due to a water-supply is, as has been said, a rare occurrence, but it is very common in any city to find isolated cases of one or other of the forms of enteric fever for which no cause of infection can be traced—cases of paratyphoid fever, &c. Not infrequently these occur over one special area and we look for the cause in the so-called "carriers" or the milk-supply. At other times the condition is more widespread, occurring in widely separated areas. Can we, in all these cases, give a clear verdict that the water-supply is not responsible? It may be objected that if the water was responsible, the outbreak should surely assume almost epidemic proportions. But we should remember that in any properly controlled water-supply these pathogenic organisms would be few and not distributed uniformly through it, and, unless the contamination was very marked, only a few people would be ingesting those bacteria, and of these few perhaps only one would get a sufficient number to set up the disease process.

No system of bacteriological examination can prevent isolated cases of infection, but if there is no systematic and regular examination of the water-supply such a source of infection is not discovered and the isolated cases of infection go on indefinitely.

One instance will suffice for my purpose. In a certain city during the year 1924, 24 cases of paratyphoid fever were notified as compared with three in 1919, five in 1920, two in 1921, three in 1922, three in 1923, and three in 1925—i.e., 19 in six years, and in only three out of these 19 cases was the source of infection not ascertained. The 24 cases were widespread, and the medical officer of health wrote: "The distribution indicates that there was some agency operating in distributing the infection which had not been operative during the preceding years. From investigations made it is extremely improbable that either milk, cream, or ice-cream was the medium of infection. The agent responsible for the spread must be one that is widely used but not heavily infected, and one probably more partaken of by children than by adults." Though an infected water-supply would "fit this bill," yet it would be hazardous to state that the water-supply was the infecting agent. But what are the facts? The cases occurred during the early part of the year, and during the latter part of the previous year the *B. coli* content of the water was high and was continuously so for a period. This called for a special investigation, and during this investigation organisms of *B. paratyphosus* type were isolated and, in some cases, the bacteria gave agglutination reactions with a paratyphoid serum in dilutions up to 1 in 80. The organisms were very few in number, and I think it is, to say the least, probable that they were the causal factor. Now the search for these organisms was wholly dependent on the regular examination and the finding of excessive numbers of *B. coli* continuously over a short period. Eventually these bacteria were traced to their source. Had there been only irregular examinations, this source of infection would have been missed and an increasing number of cases of paratyphoid fever might have occurred, with the possible result of an epidemic of the disease.

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* Part II. will appear next week.

SPECIAL ARTICLES

TUBERCULOSIS IN MAN AND ANIMALS.

A STUDY IN RESISTANCE.

In communities long civilised and in animals long domesticated a varying degree of resistance or immunity limits and modifies the effects of tuberculosis. We do not, therefore, often get an opportunity in this country of studying natural florid tuberculosis untempered by immunity. "The strengthening against resistance," wrote Sir James Paget[1] many years ago, "the reactions after injury, the turbid activity of repair, the collection and removal of inflammatory products, the casting of sloughs, the discharge of morbid materials from the blood—all these are examples of the manifold good designs of disease; and they evince such strength and width of adaptation to the emergencies of life, we might think the body was designed never to succumb before the due time of its natural decay." And he concludes the matter by remarking that "untimely deaths should make us timely wise." In a monograph,[2] on which we published a short preliminary note last week, Dr. H. H. Scott exemplifies the untimely deaths from tuberculosis of the unprotected. But it is not only the untimely deaths which attract attention to these men and animals, there is also much to be learned from their manner of dying. The florid lesion, the variation in portal of entry, and, quite apart from these portals of entry, the different organs of the body affected in the different natural orders, all combine to make tuberculosis of the non-resistant and unprotected an object lesson in the building up of an immunity. The race is not for the strong but for the immune.

Wild Animals in Captivity.

In the section dealing with tuberculosis in wild animals in captivity (incidentally there are very few data as to tuberculosis in wild animals in their native haunts, but it may be safely assumed that the disease rarely exists, though Cobbett notes three instances in birds) Dr. Scott emphasises a peculiarity of which, at present, there is no adequate explanation—namely, that the organs involved, or most liable to be attacked, appear to differ in different animal species. Furthermore, the tuberculous lesions of captive wild animals differ in two important respects from those met with in the corresponding natural orders of domesticated animals. In the first place, the disease runs a more rapid course; in the second, dissemination of the infecting organism usually takes place early and the lesions are widespread and advanced. It is noteworthy, too, that the wild animal in captivity may remain, to all appearances, in excellent bodily condition up to within a day or two of death from advanced and generalised tuberculosis. The absence of wasting, which is so marked a feature in human beings and domesticated animals, seems to imply a rapid course.

As to the actual incidence of tuberculosis in wild animals in captivity, Dr. Scott believes that the figures at the London Zoological Gardens are probably misleading because fresh batches of animals are constantly arriving (some of which have been in captivity previous to their arrival), and new arrivals, owing to lack of accommodation, may sometimes go straight into cages with older inmates. In more recent days, however, many of the smaller animals have undergone a quarantine period in the sanatorium of the Gardens before being introduced to the society of healthy animals, a provisional isolation which is practised by poultry breeders and others who buy stock from outside sources. As an alternative method of safeguard, in the Zoological Gardens at Philadelphia a preliminary tuberculin test is made. According to Fox, before the tuberculin test was started at Philadelphia the average duration of exhibition life of all monkeys did not exceed 11 months; now it is 35 months. Dr. Scott states that the London Society's record, even without a tuberculin test, has been more fortunate, a considerable number of monkeys live for years without contracting the disease, whilst the proportion dying of tuberculosis has never been a large one.

Localisation in Different Wild Animals.

Turning now to the characteristics of the disease found in different groups of animals, in captive ungulates the well-known serous involvement known as "pearls" is not so common in wild bovidæ as in domesticated. Pulmonary affections of ungulates is a prominent feature, but there are indications, notably in the deer and the buffalo, of pulmonary fibrosis which suggest a certain degree of resistance, and, as in domesticated cattle, calcification may take place early. For some reason, not explained, there is apparent immunity of the spleen. Of the fifteen ungulates with fatal tuberculosis recorded in the series, there is not a single instance of meningeal or intracranial tuberculosis, an immunity recognised in domesticated species also. Taken altogether the facts recorded suggest that the respiratory portal of entry is the common mode of infection in these animals, which is in marked contrast to the disease in monkeys.

Available material for the study of tuberculosis in the latter is much larger, and the reader is referred to a paper by Beattie and Scott[3] dealing with this material, which is republished in the monograph in full. The writers found that the mode of extension of the disease could be explained by the lymphatic distribution, which was worked out with very considerable care and compared with the human cases examined by Dr. Scott in Hong-Kong. Condensing the writers' 10 groups the following classification of the disease in monkeys may be made: (1) cases of undoubted respiratory origin; (2) the same with blood stream dissemination or alimentary infection, or both; (3) cases of primary alimentary infection; and (4) the same with secondary pulmonary infection.

Dr. Scott records 41 instances of tuberculosis in wild birds in captivity in the Zoological Gardens. In these, as in domesticated species, the alimentary tract appeared to be the common portal of entry of the bacillus. Although many orders are represented in the series, including gulls, ostriches, vultures, eagles, and finches, only six examples of respiratory origin were noted and none of these was amongst the gallinæ, the writer's experience supporting that of Fox in Philadelphia that the preponderance of respiratory tubercle occurs only in the Passeres.

[1] Lectures on Surgical Pathology. By Sir James Paget. Second edition. London. 1863.

[2] Tuberculosis in Man and Lower Animals. By H. H. Scott. Special Report Series No. 149. Medical Research Council. HM. Stationery Office. 1930. Pp. 270. 4s.

[3] Jour. Path. and Bact., 1928, xxxi., 49.

As in domesticated birds the type of lesion consisted of isolated nodules having a cretaceous core and giving the impression of being encapsulated, though no capsule is demonstrable microscopically. Pus formation is rare in birds—possibly, as Dr. Scott suggests, because the polymorphonuclear leucocyte is present in much smaller numbers—and, instead of breaking down and softening, a dry necrosis results. Tuberculoma, gelatinous tuberculosis, and three types of intestinal tuberculosis are found, whilst tuberculosis of the liver and spleen are common.

Comparing these records of tuberculosis in captive wild animals with those of domesticated animals and with man, one is struck by the fact that bone and joint tuberculosis and tuberculosis of the central nervous system, which play a considerable part in the tuberculosis mortality in man, are extremely rare in animals both domesticated and wild. These two types are almost unknown, too, in laboratory animals. As far as we know, no adequate explanation is forthcoming on the point and the experimental work thereon is meagre. Excepting the bovines, rabbit, guinea-pig, and rat, which have been extensively used for experimental purposes, the histological side of animal tuberculosis has not been exhaustively explored. When this work is done many of the gaps in our knowledge of the comparative pathology of tuberculosis will doubtless be filled up, and it is possible that an explanation of the rarity of lesions of bones and joints and of the central nervous system will be forthcoming.

Domesticated Animals.

On the question of tuberculosis in domesticated animals, there is, of course, much more information available. The disease is common amongst bovidæ, and has been so well worked out by the Royal Commission that nothing further needs to be said here. Tuberculosis in the dog was at one time considered very rare, perhaps partly because the lesions are often confused with those of sarcoma. Cobbett [4] some years ago compiled a table of published records from the veterinary schools of Europe which varied from 0·06 per cent. in Berlin to 5·6 in Paris. Dr. Scott has now collected the histories of 100 cases. The infecting bacillus was human or bovine, but the former predominated. Of these animals 51 lived in restaurants or cafés where the floors were constantly soiled with human expectoration, and 23 others were in intimate contact with sick persons. Dogs frequenting abattoirs may also become infected. Tuberculosis of the lungs and pleuræ are common, and unlike tuberculosis in man, in whom it is of extra rarity, the pericardium is, according to Cobbett, not an uncommon site of infection.

In domestic birds Dr. Scott states that tuberculosis is fairly common. It is found in gallinaceous birds, in parrots, and in canaries. The disease is a frequent occurrence in gallinæ, and it is met with in epizoötics. It has, indeed, been fairly well worked out. Infection spreads by the excreta, emaciation is marked, and the indications of an alimentary root of infection far exceed the respiratory, the liver and spleen swarming with bacilli. Parrots and canaries are stated to be susceptible to the mammalian types of the tubercle bacillus as well as the avian, and infection from man is on record.

Post-mortem Experience in Hong-Kong.

The findings in the 300 cases of tuberculosis in the human being examined post-mortem in Hong-Kong occupy a considerable part of the monograph. There were 225 children under 10 years of age in the series. Although tuberculous mediastinal glands generally indicated a lung lesion there were 13 per cent. of cases of caseous tracheo-bronchial glands without any focus in the lung, and in rather less than half of these there was evidence in favour of an alimentary portal of entry. For the rest the evidence appeared to be generally in favour of a respiratory origin. In only one instance amongst the children recorded in the series was there an old healed shut-off focus present. This was in a child aged 3 in which the middle lobe of the right lung showed an old fibrous and calcareous nodule, with a terminal generalisation of the disease in the lung and tuberculoma of brain. Meningeal tuberculosis was fairly common as a terminal blood infection. Instances of involvement of the urinary tract, except as part of a generalised vascular dissemination, were rare. There were two rare cases in which there was a tuberculous infection of the internal genitalia in female children of 8 months and 4 years of age respectively. But perhaps the most interesting of all was a group of five infants, three aged respectively 22, 24, and 29 days, and two aged 7 weeks. In the first three there was no disease other than miliary or broncho-pneumonic lesions of the lungs, even the lymph glands being unaffected. In the two of 7 weeks the disease had advanced to the mediastinal glands and pleura, and one had a small cavity in the lung. This series in such young infants, even though of an unprotected race, must be almost unique. They were evidently primary respiratory infections, and presumably resulting from massive doses. Indeed, throughout the series of the Hong-Kong cases the reader is impressed with the intensity of the infection. The natural assumption is, of course, that such acute cases, as in the case of the wild animals in captivity, exhibit tuberculosis in a virgin soil untrammelled by immunity and resistance. But there is another side of the question on which we are still woefully ignorant—viz., the size of the infecting dose. It requires no stretch of imagination to realise that a people coming into contact with Western civilisation may adopt the ways of life of the West in its manifold activities without adopting the standards of cleanliness and natural safeguards of health which the Westerner uses almost as a reflex action. And when lack of immunity and absence of safeguards go hand in hand the result is a foregone conclusion.

[4] Cobbett, L.: Causes of Tuberculosis, Cambridge, 1917.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

THE WHITE HOUSE CONFERENCE.

THE culmination of more than a year's work of facts, findings, and discussion by more than a thousand experts in the fields of child health and education has been reached in the White House Conference, which met in Washington, D.C., from Nov. 19th to 23rd. The conference was augumented to 3000 members by delegates who were invited by President Hoover to attend. Reports of committees were already available in print, and usually these reports have been endorsed by the conference itself. In many cases the conclusions are already well established in child welfare practice and no debate could be expected. In these cases the purpose of the conference seemed to be rather one of popular education than of creative imagination on scientific research. In certain sections—notably the section on medical

service—so much material had been collected that it was found impossible to digest it in time for the conference. The work of this section will, therefore, be continued into next year.

In only one instance did a serious dispute arise over the work of the preliminary committees. The subcommittee of the section dealing with reorganisation of the federal health service recommended that the maternity and infancy work be taken from the Labour Department (Children's Bureau, under Miss Grace Abbott), and transferred to the public health service. Miss Abbott, herself a member of this subcommittee, wrote a minority report in which she said that "the conception of the unity of the child and the value of having the discipline and techniques of the social, medical, statistical, and other related sciences associated in the scientific study was advocated by the conference of 1909 and enthusiastically approved by President Roosevelt and, in turn, by Congress . . . . There is ample evidence that this plan of unified approach has greatly increased public interest in all the problems of children and child life. To remove the health work from the Children's Bureau would not merely remove one section of the Bureau's activities; it would destroy it as a Children's Bureau."

This minority report, in the haste of assembling material for the conference, was omitted from the printed volume of preliminary committee reports. But the omission came to the attention of representatives of women's organisations in the conference, and overnight a remarkably strong protest movement against the majority recommendation made itself manifest. The attempt of the majority of the committee to ignore this protest movement and even to prevent it from becoming vocal merely added to its momentum. It was an astonishing spectacle to see the surgeon-general of the public health service rebuking a leading sociologist for introducing remarks on social welfare in a section on public health matters, and one which gave some force to Miss Abbott's previous arguments. Good sense ultimately prevailed, and the disputed recommendation was referred to a continuation committee, which was instructed to bring in a unanimous report. The conclusion of this same subcommittee that "the creation of a new department with a cabinet officer for the direction of federal health activities is not essential at present to the accomplishment of the objectives to be proposed" passed the conference without exciting any comment. Nor was there any overt criticism of the recommendation that federal grants in aid of health be continued and increased. If the American Medical Association was represented its representatives raised no voice of protest against this continuation of the functions of the late Shephard-Towner Act. It is possible that the excitement over the work of the Children's Bureau prevented discussion upon these other important matters.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

NEW REMEDIES AND OPERATIONS.

IN a recent address to the Pharmaceutical Society in Edinburgh Dr. Ralph Stockman, professor in materia medica and therapeutics in the University of Glasgow, dealt with some very practical points. He said it had to be admitted that the profession owed the introduction of some good remedies to manufacturing chemists, and these deserved gratitude also for furnishing reliable preparations of proved and attested remedies mostly in a convenient and pleasant form. There their legitimate function ceased and the rôle of teacher of pharmacology and therapeutics did not appertain to them. Infant foods and artificial foods generally had a dubious record from the point of view of therapeutic activities. The same might be said of treatment by serums and vaccines and also the development of endocrinology, which had furnished medicine with invaluable remedies. A weakness in the medical curriculum was the very large amount of mere description on the teaching side and an almost equal amount of mere memorising on the student side, with a minimum of those disciplines, such as mathematics or physics, which tend to develop reasoning power. This was inherent in biological studies and possibly unavoidable in medicine, but possibly not. It was essential to ensure that during studentship some actual experience in treatment was available. It had sometimes crossed his mind that therapeutic practice might be stabilised intra-professionally by imitating the procedure of their legal confrères and establishing a medical court with medical judges, solicitors, advocates, and juries. Before these courts, with their experienced personnel, highly trained in weighing the law of evidence, new drugs, new treatments, and new operations might be summoned to appear and show reasons for their existence and practice. Some such filter or buffer would be of incalculable benefit to the medical profession and a protection to the public at large.

ALCOHOL AND THE LAW.

In his Henderson lecture on Alcohol and Behaviour Prof. Sydney Smith said that under the new Road Act it was an offence to drive a car while "under the influence of alcohol, to such an extent as to be incapable of proper control of such vehicle." We knew, he said, that any quantity of alcohol diminished the control, and as this loss was gradually progressive, it was impossible to fix any exact point at which a person became incapable of driving a car. The question of diagnosis was thus going to be very difficult. Even when we knew the amount that a person had drunk we were not much further forward, for the effect of drink was not only different in different individuals, but varied enormously in the same individual at different times.

Prof. Sydney Smith also emphasised the fall in the consumption of alcohol in Great Britain. The annual consumption of beer had, he said, diminished to half, and the consumption of whisky to about a quarter, of the amount used in 1900. In the present year this fall was continuing. With this fall in alcohol consumption there had been a similar diminution in arrests for drunkenness, from about 200,000 in 1900 to 60,000 in 1928. The lecturer pointed out that although drunkenness had progressively diminished, sexual crimes had progressively increased. Thus, in the period 1900–04 there were about 1400 cases of rape and other sexual crimes annually, whereas in 1929 there were over 3000 similar cases. There seemed to be little correlation between drunkenness and the more serious crimes of violence and sexual crimes, but it bore a close relation to minor violence, neglect of children, and similar offences. Moderate indulgence in alcohol did not appear statistically to prejudice the expectation of life, but this finding should be accepted with some reserve.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

SWEEPSTAKES AND AFTER.

THE present legislation governing the promotion of sweepstakes in the Irish Free State limits their benefits to such hospital charities as fulfil certain statutory conditions. The success of the recent sweepstake on the November Handicap has suggested to some that these limitations should be abolished, or made less stringent, so that a different class of institutions might benefit. A Bill was introduced to the Dáil last week for the purpose of permitting rate-supported hospitals to share in future sweepstakes. The fate of the Bill is as yet uncertain, but it is clear that what it proposes is something much more than merely the extension of the application of sweepstakes. It introduces a new principle. If the ratepayers are to be allowed to relieve themselves of their financial responsibilities in regard to the maintenance of institutions for the sick, there seems to be no reason why they should not throw their other burdens on the gambling public also. Why not have lotteries for the upkeep of roads, the building of bridges, the provision of houses, and the thousand other activities for which the rating authorities are responsible? If the ratepayer is to be relieved in this way, why not the taxpayer? The way is open for the return of State lotteries.

Meantime, while those who have received sums beyond their hopes for the charities in which they are interested are intoxicated with their past success and their hope of future, there is a growing feeling of distrust of the sweepstakes as a method of financing hospitals, and this feeling is by no means confined to, though most strongly expressed by, the professional moralists. The latter, it is true, had their innings last Sunday, on the occasion of the annual collection in many of the Protestant churches on behalf of the Dublin Hospital Sunday Fund. The benefits of the Fund are to be confined to the hospitals which do not share in the profits of sweepstakes. The clergy, in nearly all cases, made a strong appeal on behalf of these deserving and self-denying charities, and at the same time gave their reasons for opposition to sweepstakes. In so far as these are based on moral grounds the matter is not one for discussion here, but the Archbishop of Dublin and some other preachers touched on another point of great importance on another plane. The Archbishop suggested that to harness the sacred name of charity to appeals to personal gain might strike a serious blow at the voluntary system of giving. Many go further, and are inclined to think that a few more successful sweepstakes are not unlikely to strike at the very foundations of our voluntary hospital system. This may be good, or it may be bad, but it is very far from what was intended by the original promoters of the legislation permitting sweepstakes. If hospitals can derive adequate support from sweepstakes or lotteries, the stimulus to voluntary support is gone. In time, indeed, the support of the hospitals may become a mere incidental tax paid by professional promoters for the privilege of running a sweepstake. It is to be noted that the fees paid to the professional promoters in the recent sweepstake were little less than one-third of the sums paid to the hospitals. The problems raised by a successful sweepstake are much greater and more far-reaching than were at first recognised.

GENERAL MEDICAL COUNCIL.

Committee Business.

(*Concluded from p. 1258.*)

DIPLOMAS OF PUBLIC HEALTH: REVISED RULES.

Sir John Moore moved the adoption of the report of the Public Health Committee, and with it the revised rules governing diplomas and degrees in public health, sanitary science, and State medicine.

Sir George Newman, the chairman of the sub-committee responsible for the revised rules, explained that three reasons had led to the revision. The first was the rapid development of the practice of public health, particularly in obedience to many statutes passed since the framing of the old rules in 1921. The public health officer had become more clinical and less analytical. Moreover, the new medical curriculum had considerably altered the capacity of the men presenting themselves for a diploma. The second reason was the difficulty which the schools, especially the new London School of Tropical Medicine and Hygiene, had found in conforming to the old rigid requirement that the course should occupy 12 calendar months. The third reason was the passing of the Local Government Act, 1929, which had greatly increased the clinical responsibilities of public health officers.

The Council, when directing the revision, had expressed its desire, said Sir George, to reduce the number of candidates who did not intend to practise public health work. Rule 1 had been left substantially alone, but the note appended to it now referred to the clinical aspects of State medicine.

Rule 1.—A period of not less than two years shall elapse between the attainment by a candidate of a registrable qualification in Medicine, Surgery, and Midwifery and his admission to the Final Examination for a Diploma or Degree in Sanitary Science, Public Health, or State medicine.

The purpose of Rule 1 is to provide opportunity for candidates, while passing from the state of pupilage to that of responsible practice, to give mature consideration to the obligations and duties involved in the work of the Public Health Service, and to acquire direct experience of medical work in a responsible capacity, in general medical practice, in hospital or laboratory appointments, or in any special branch of clinical work or study related to State medicine. The Council believe that, in the public interest, the time has arrived to adapt the Diploma or Degree to candidates who are seriously intending to take up Public Health work as a career.

Rule 2 contained the cardinal alteration affecting the arrangements of the schools.

Rule 2.—The curriculum for a Diploma or Degree in Sanitary Science, Public Health, or State medicine shall extend over a period of not less than twelve calendar months (or an academic year of whole-time study covering a period of not less than nine calendar months) subsequent to the attainment of a registrable qualification.

Rules 3 and 4 no longer prescribed a definite number of hours for each of the special subjects, but left the distribution of the aggregate time to the discretion of the teaching bodies.

Rule 3.—Every candidate shall produce evidence of having attended, during not less than 280 hours, at an institution approved by the Licensing Body granting the Diploma or Degree, practical instruction in: (*a*) Bacteriology and Parasitology (including immunology, serology, medical entomology, &c.), especially in their relation to diseases of man, and to those diseases of the lower animals which are transmissible to man; (*b*) Chemistry, Physics, Radiology and Electrology in relation to Public Health; (*c*) Physiology and Biochemistry in their application to nutrition and hygiene; (*d*) Meteorology and Climatology in relation to Public Health.

Rule 4.—Every candidate shall produce evidence of having received, during not less than 120 hours, at an institution

approved by the Licensing Body granting the Diploma or Degree, instruction in the following subjects: (*a*) The Principles of Public Health and Sanitation; (*b*) Epidemiology and Vital Statistics; (*c*) Sanitary Law and Administration (including Public Medical Services); (*d*) Sanitary Construction and Planning.

The subcommittee, continued Sir George, had added to Rule 3 (*a*) immunology and serology, and to (*b*) radiology and electrology; (*c*) introduced something in the nature of a new subject, in response to the unanimous demand of the schools. The total of hours allotted to the subjects in Rule 4 was slightly increased.

Rule 5 required the daily attendances at a recognised hospital for infectious diseases to number 24 instead of the awkward figure of 30.

Rule 6 laid down that instruction in the administration of the special services should include attendance at the centres or institutions concerned. Rule 7 had not been changed and Rules 8 and 9 had been shortened.

Rule 8.—The examination for Part I. shall be practical, written and oral, and shall include the subject referred to in Rule 3.

Candidates may not be admitted to examination for Part I. until after they have completed the prescribed courses of instruction in the subjects thereof.

Rule 9.—The examination for Part II. shall include the subjects referred to in Rules 4, 5, and 6. The examination shall be written and oral, and shall include practical examinations in Infectious Diseases; Food Inspection; Inspection of premises—dwellings, factories, workshops, schools, &c. Candidates may not be admitted to examinations for Part II. until after they have completed the prescribed courses of instruction in the subjects thereof. No candidate shall be admitted to Part II. of the examination for a registrable Diploma or Degree in Public Health until after the lapse of not less than two years from the date of his obtaining a registrable qualification in Medicine, Surgery, and Midwifery, which qualification must be registered in the Medical Register before admission to Part II. of the examination.

Sir Robert Bolam proposed to amend Rule 1 to read: "Not less than two years shall elapse between the registration (instead of 'the attainment') by a candidate of a registrable qualification" in medicine. He considered that this alteration was necessary to ensure that candidates had sufficient experience of the practice of medicine, and to prevent them from entering if they had sequestered themselves in laboratories or scientific work. Sir George Newman expressed his sympathy with the principle, but considered that the amendment would involve excessive hardship, especially—as the President emphasised—to candidates from overseas, and the Council rejected the amendment.

THE NEW SPECIAL SUBJECTS.

The additions to the special subjects excited a lively debate. In reply to questions from Dr. Jamieson and Mr. Eason, Sir George said that, as medical officers of health would now exercise supervision over a large number of institutions in which electrical apparatus was used, it was necessary that its clinical application should not be foreign to them, and that they should be able to advise on its installation and employment. Mr. Monsarrat and Sir Robert Bolam objected that it was impossible in the time to give a candidate a sufficient equipment to enable him to advise on the installation of or treatment by electrotherapeutic apparatus, and Sir Robert moved the deletion of the words "radiology and electrology." Dr. Sheen, in seconding the motion, suggested that logically every specialty should be included in the course, which was in danger of becoming as badly overloaded as the general curriculum. Sir George Newman retorted that it would be better to omit chemistry and physics. It was not, he said, intended to make any candidate a specialist, but to enable him to give intelligent advice to his authority.

Sir Robert Bolam's amendment was lost by 11 votes to 16, but Sir Holburt Waring proposed and Sir Norman Walker seconded an amendment to insert the words "and Biophysics." Mr. Monsarrat objected to the introduction of further complications into a course which already required the services of several teachers, and this amendment was also rejected. Nothing daunted, Dr. Brackenbury proposed to add to the syllabus a course of genetics, but withdrew his motion on learning that it was open to any licensing body to include this subject in the syllabus.

The revised rules were adopted. The words "Medical Register" were substituted by the Council at the end of Rule 9 for the words "Great Britain."

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED NOV. 29TH, 1930.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 160 (last week 116); scarlet fever, 2182; diphtheria, 1526; enteric fever, 36; pneumonia, 1016; puerperal fever, 36; puerperal pyrexia, 118; cerebro-spinal fever, 16; acute poliomyelitis, 12; acute polioencephalitis, 1; encephalitis lethargica, 12; dysentery, 10; ophthalmia neonatorum, 107. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Dec. 2nd–3rd was as follows:—Small-pox, 236 under treatment, 2 under observation (last week 221 and 3 respectively); scarlet fever, 1944; diphtheria, 2217; enteric fever, 14; measles, 84; whooping-cough, 106; puerperal fever, 23 (plus 10 babies), encephalitis lethargica, 121; poliomyelitis, 2; "other diseases," 47. At St. Margaret's Hospital there were 15 babies (plus 5 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 33 (0) from measles, 1 (0) from scarlet fever, 5 (1) from whooping-cough, 44 (9) from diphtheria, 44 (11) from diarrhœa and enteritis under two years, and 56 (5) from influenza.

The fatal case of enteric fever was reported from Barnsley. Nine fatal cases of measles occurred at Hull, 6 each at Bristol and Liverpool. Nine deaths from diphtheria were reported from Liverpool. Diarrhœa accounted for 7 deaths at Liverpool, 3 each at Nottingham and Salford. Influenza was credited with 5 deaths at Liverpool and at Manchester, 4 at Salford, and 3 at Bolton.

The number of stillbirths notified during the week was 273 (corresponding to a rate of 44 per 1000 births), including 59 in London.

CHRISTIE CANCER HOSPITAL.—This Manchester Hospital is to be rebuilt, and it is hoped to begin the work shortly. The British Empire Cancer Campaign has contributed £25,000 and a similar amount has been received from legacies; patients and their friends have given £800. A further large sum will, however, be needed. It is hoped to have the hospital completed by the end of 1932.

LONDON HOSPITAL MEDICAL SCHOOL.—At present this school, the finances of which are entirely distinct from those of the hospital, rents three neighbouring houses which accommodate, not very satisfactorily, 22 students. The need for better quarters is so great that the medical and surgical staff have started a fund, now amounting to over £2000, to which they have themselves subscribed liberally. It is hoped to raise sufficient money to build a hostel close to the hospital which, in Lord Knutsford's words, "would not merely give board and lodging, but would provide some of the features of the collegiate life of the Universities."

PUBLIC HEALTH SERVICES

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are 1929 statistics of two counties and the island of Guernsey :—

Name of city and estimated (R.-G.) mid-year population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and neonatal mortality.	Young child (1–5 yr.) mortality.	Maternal mortality from childbirth.
Derbyshire .. (624,300)	16·6	11·6	0·71	1·15	2·4	1·9	68/—	—	3·7
Rutland .. (18,100)	14·4	14·3	0·72	1·50	3·3	2·4	84/—	—	3·8
Guernsey .. (39,040)	19·4	15·1*	0·90	1·82	2·5	1·8	79/44	20	0·0

Registered stillbirths per 100 live births: Derbyshire 5·0. Rutland —, Guernsey 4·4.
* Standardised 12·0.

Derbyshire.

Dr. W. M. Ash cites as an example of the need for coöperation and coördination of voluntary and official bodies that one of the nine committees of the council, which deal with medical services, is at present considering subscriptions to 100 voluntary organisations for the treatment of the sick. He goes on to discuss hospital accommodation of all types. For isolation accommodation existing hospitals should serve larger areas. Some new hospitals will be required and reciprocal arrangements can be made with the hospitals of county boroughs. Isolation hospitals can serve large areas by means of motor transport because they need not be so readily accessible for visitors and the staffs, and patients for these larger (and therefore more economical) hospitals should be interchangeable. As regards general hospitals, Dr. Ash shows that there is at present a nucleus institution within easy reach of any district in the county, and such nucleus institutions he would have developed into comprehensive hospitals, which would receive medical, surgical, obstetrical, and gynæcological cases from a given area, and comprise children's wards and, if necessary, accommodate the school clinic, maternity, and child welfare centre and tuberculosis dispensary. Each area hospital would thus become a centre of both preventive and curative medicine. Convalescent homes are also needed and accommodation for long-stay cases other than surgical tuberculosis. Dr. Ash also strongly urges that all incipient and early cases of mental sickness should be kept quite apart from the confirmed and advanced cases. He would have the large general and especially the teaching hospitals provide both in-patient and out-patient treatment for this type of case, for if prevention is going to be successfully applied in mental infirmity, early mental treatment must be taught to every medical student. The county antenatal scheme is now functioning fully, and the 12 clinics conducted by Miss E. E. Stephens, M.D., were attended by 939 antenatal cases and 215 postnatal.

The notifications of diphtheria were 649 and the deaths 45—a case-fatality of 6·9 per cent. There were 26 cases of enteric fever with 6 deaths. Two cases occurring, one in March and one in October, in different areas illustrated the difficulties of the carrier problem. Investigation showed that a Mrs. X was living at each house when the case occurred. During 1927 and 1928 two other cases had occurred in houses where she stayed. Three consecutive and several single examinations of fæces and examinations of the urine, also Widal and agglutination tests, all proved negative. Finally, of four consecutive fæcal examinations the first three were negative and the fourth gave a subculture of *Bacillus typhosus;* the fifth and sixth were negative, and the seventh positive. Mrs. X was much distressed and agreed to have her gall-bladder removed. The bile in the gall-bladder gave abundant growth of *Bacillus typhosus* in pure culture, even in dilution of 1 in 1,000,000.

The efficient arrangements made for consultants and admission to hospital is making the notification of puerperal fever more effective, but Dr. Ash points out that, where a case obviously requires hospital treatment, the expense of calling in a consultant as well is unnecessary. All the midwives in the county have been urged to wear masks while attending confinements, especially if suffering from a cold or throat infection.

The orthopædic scheme has been extended. The eight beds at Bretby Hall for non-tuberculous cases have been increased to 65. An additional clinic has been opened at Heanor and considerable progress made with the new 32-bed block for adults suffering from surgical tuberculosis. An endeavour is being made to provide more accommodation for advanced pulmonary tuberculosis within easy reach of the relatives. The sandstone industry (silicosis) scheme came into force on April 1st and 18 new employees were examined by the tuberculosis officers. Under the Housing (Rural Workers) Act, 1926, only nine applications for grants had been received up to the end of 1929. One application was withdrawn and another refused, and grants to the extent of £475 were made in respect of seven dwellings. The classification of the 623 samples of sewage effluents collected during the year was as follows: good, 211; satisfactory, 164; unsatisfactory, 103; and bad, 145.

Dr. A. N. Robertson, medical superintendent of Walton Sanatorium, is not impressed with the value of gold therapy after trying allochrysine and collosol gold. He never saw any harm result from tuberculin if used with proper care, but thinks it occasionally did good, and has a hankering after its use again. He has no doubt of the immense value of surgical methods in suitable cases. Of all diagnostic tests he still places most reliance on the subcutaneous tuberculin method. The number of patients admitted was 343. Ten new cases began artificial pneumothorax treatment and 19 old cases continued. Red ray treatment by the Murray Levick lamp in cases of pleural effusion has been found useful in diminishing the number of gas replacements.

Rutland.

Dr. Christopher Rolleston reports that his council has made one "declaration" under the Local Government Act, 1929, and that in regard to tuberculosis. The functions of the public assistance committee with regard to poor children apart from their parents and mental defectives will be discharged by the education and mental deficiency committees respectively. The remaining services for mothers and children will be discharged by the maternity and child welfare committee. Dr. Rolleston rejoices at the decline of the birth-rate, partly because of the future of the world's supply of food and partly because men are being replaced by machines. The latter reason does not seem cogent, seeing that the work of the world varies according to its population. The proper solution would seem to be reduction of the hours of work for all! The deaths were greater than in any year since 1918. Dr. Rolleston recommends the provision of trained nurses for the home treatment of pneumonia and arrangements for hospital treatment if the home is unsuitable. The births numbered 261 and 63 maternity outfits were supplied by the council. There were 38 attendances at the orthopædic clinic

at Peterborough, 14 of which were for rickets and 15 for infantile paralysis. Apparatus was provided in 12 cases and six children were admitted to Manfield Hospital. In August-September there was an outbreak of six cases of poliomyelitis at Morcott (population 384). The first cases were not diagnosed. One case, a girl of 13, died. In two cases, aged 8 and 15, the paralysis was confined to the facial muscles. The other three cases, all of the pre-school age, are receiving special orthopædic treatment. The ascertainment and care of the mentally defective and blind is being carried out thoroughly. Several very satisfactory renovations have been made under the Housing (R.W.) Act, and Dr. Rolleston would like to see this Act more used. A modern cement factory has been established at Ketton and employs 140 men. Dr. Rolleston, who lives near the works, is able to say that the amenities of the village have not suffered.

Guernsey.

Dr. H. Draper Bishop reports that the island did not escape the influenza epidemic, which was very fatal to old people. He draws attention to the fact that neither he nor the sanitary inspector has a right of entry to premises, except when infectious disease is notified. Each of the ten parishes has a constable as its executive officer and with the exception of the town parish the constable seldom desires assistance from the States' officials. Dr. Bishop hopes the States will, this year, grant their officials the same right of entry as is given in England. It is difficult to secure support for nursing and infant welfare associations, which are limited to three of the parishes at present. In Jersey there is a nurse for every parish, and Dr. Bishop would like to see a similar arrangement in Guernsey. About one-seventh of the births take place in the Lady Ozanne Maternity Home. A special committee has provided houses for 263 families since 1918, but there is still much overcrowding and a shortage of small houses. The crematorium at the States' Cemetery was completed during the year, and should have a special application owing to the limited area of land available. Dr. Bishop is not school medical officer, but he examined during the year 420 children sent to him by the school nurse.

The chief industries of the island are growing fruit, vegetables, and flowers under glass, granite quarrying, and the rearing of cattle. The latter are said to be free from tuberculosis, so that a special interest attaches to the deaths from non-pulmonary tuberculosis. There were six such deaths (a rate of 0·16) in 1929—namely, two at age-period 5 to 15, tuberculous peritonitis and tuberculous meningitis respectively; two at age-period 15–25, tuberculosis of joints and spine respectively; and two at age-period 25 to 65 from tuberculosis of kidney and spine respectively.

MENTAL HOSPITAL REPORTS.

Of the WEST RIDING MENTAL HOSPITALS that at WAKEFIELD had 2395 patients in the institution at the end of last year. The recovery-rate was 25·9 per cent. and the death-rate 7·5 per cent., the lowest on record for this institution. Autopsies were performed in 88·7 per cent. of cases. The institution shop has proved a very great success. The laboratory performed over 4000 examinations during the year and the operating theatre and the X ray and light department were kept busy. There was no typhoid, but 11 cases of dysentery. The out-patient department received 65 new cases, bringing the total on the register to 180. A great deal of work has been carried out in an attempt to bring this old institution into line with modern requirements. Parole has been given to 38 men and parole within the estate to 120 men and 497 women. There are a number of young people in the hospital, and troops of boy scouts, girl guides, and wolf cubs are run for them; they attend handicraft classes and keep pets. Fifty-four women nurses work on the male side; two nurses obtained their G.N.C. certificate during the year, bringing the total of certificated or registered to 85 men and 24 women. The hospital at STORTHES HALL, KIRKBURTON, near HUDDERSFIELD, had 1771 patients in residence on Dec. 31st last. The recovery-rate was 28 per cent. and the death-rate 8 per cent. Money allowances were granted to 24 discharged patients. Owing to an increase of 60 beds provided during the year, the hospital has now room for 1836 patients and is therefore not overcrowded. The general health during the year was good; there was no typhoid and only six cases of tuberculosis. There were 14 cases of dysentery, 11 of erysipelas, and some influenza. Useful work was provided for 50 per cent. of the men and 40 per cent. of the women. A variety of occupations are available, and the numbers are satisfactory considering the large number of senile and chronic patients. During the year a class in mat-, basket-, and rug-making was started for the blind. Malarial therapy was continued for general paralysis in 14 cases; one patient left to resume his work and six improved. A welcome addition to the hospital equipment is the new treatment centre, containing an operating theatre and sterilising room, and X ray, actinotherapy and dental rooms. The dentist attended weekly and saw a large number of patients. The laboratory performed nearly 4000 examinations. Two shops were opened where patients can buy necessities; any profits will be directed to the provision of amusements. During the year ten attendants and five nurses passed the final R.M.P.A. examination and one nurse the final G.N.C. examination. There are now 52 attendants and 32 nurses certificated or registered.

Of the two HAMPSHIRE MENTAL HOSPITALS, that at KNOWLE had 1056 patients on its books on the last day of last year. The recovery-rate was 32·78 per cent. and the death-rate 5·6 per cent. The cause of death was verified by post-mortem examination in 71 per cent. of the fatal cases. There were five cases of typhoid, and a search for carriers is still being made. There was one case each of scarlet fever, diphtheria, and measles. Six cases of general paralysis were treated by malaria and two were discharged recovered. A new admission block and a new nurses' home are under consideration. During the year six nurses obtained their R.M.P.A. certificate. At PARK PREWETT there were 1298 patients at the end of 1929. The recovery-rate was 22 per cent. and the death-rate 8 per cent. There were only five cases of tuberculosis under treatment at the end of the year. Four deaths resulted from this disease, three from dysentery, and five from influenza, but the general health was good. A series of sporadic cases of erysipelas has now ceased. The consulting surgeon performed four major operations and the dental surgeon and ophthalmic surgeon attended regularly. Two cases of general paralysis treated with tryparsamide were discharged recovered, but other cases showed little improvement; three men were sent to Knowle for malarial treatment. The pathological laboratory, in addition to routine investigations, has been studying undulant fever, three cases of which appeared in the hospital. The Meinicke micro-reaction is used as a routine test for all new cases. A new nurses' home was opened during the year and eight cottages for married staff have been built. Ultra-violet ray apparatus has been installed in the admission hospital and a villa has been equipped for male patients on parole. Every effort is made to induce patients to work, but the visiting commissioners urge the appointment of an occupations officer. Eight nurses passed the R.M.P.A. examination.

"PENNY-IN-THE-POUND NEWS."—This new organ of the Merseyside Hospitals Council, issued free, describes each month the progress of the remarkably successful contributory scheme. In the November issue Mr. Sydney Lamb, the secretary of the council, tells how the scheme came into being, and describes the rapidity of its progress, but estimates that there are still some 225,000 persons who ought to be enrolled. At least 95 per cent. of the large firms have, however, already joined the scheme. By means of an ingenious pictorial map an appeal is made to motorists to volunteer to take relations of patients to hospitals in urgent cases during the night.

CORRESPONDENCE

PASTEURISATION OF MILK.

To the Editor of THE LANCET.

SIR,—In view of the importance of milk in the diet of both children and adults, it is necessary for the known facts regarding the safety of this article of food to be placed before consumers and all concerned.

It is widely acknowledged that the average consumption of milk in this country could be greatly increased to the benefit of the public health and the improvement of the national physique. A substantial increase, however, cannot be anticipated until public opinion demands the highest standards and practice of milk production and distribution.

In this country an effort has been made to improve the milk-supply by means of a grading system and, notwithstanding a certain measure of confusion that has arisen from the excessive number of grades, it is still fundamentally true that the ideal milk supply would be that which would conform to the highest grade defined by the Ministry of Health, namely, "Certified milk."

In practice, however, it is found that only a very small proportion of the public are able to afford this grade, even for the feeding of infants, and the same position, in varying degrees, applies to the other grades that lie between it and pasteurised milk, which is the form of milk commonly distributed in great centres of population. Experience has shown that where pasteurisation (the heating of milk under conditions which ensure the destruction of harmful bacteria, yet leave the vitamins unimpaired) is generally practised, infection traceable to milk recedes almost to vanishing point. This fact has led no fewer than 21 cities in the U.S.A. to ordain the compulsory pasteurisation of milk.

The signatories, while expressing no opinion on the principle of compulsion, are emphatically agreed that the time has arrived when, in order to increase milk consumption and diminish the risk of milk infection, pasteurisation should be universally recognised as the immediate practical method of ensuring safety. They record their satisfaction at the fact that about 90 per cent. of the London supply is pasteurised with markedly beneficial results.

They are of opinion that the first step in educating the public to demand pasteurised milk should be the simplification of the present milk grading system and the clear labelling of pasteurised milk as such. They are further of opinion that while no effort should be relaxed to improve milk at the source, the entire milk-supply—excepting "Certified milk"—should be pasteurised.

We are, Sir, yours faithfully,

DAWSON OF PENN. H. CHARLES CAMERON.
THOMAS HORDER. CHARLES PORTER.
JOHN ROBERTSON. JAMES FENTON.
ROBERT HUTCHISON. JOHN MACMILLAN.
A. BOSTOCK HILL.

Dec. 9th, 1930.

NEUTRALISATION OF POLIOMYELITIS VIRUS.

To the Editor of THE LANCET.

SIR,—In an article published in your issue of Oct. 25th (p. 895) Dr. R. W. Fairbrother and Dr. W. G. Scott Brown record the results of experiments on the action of the serum of various individuals on the virus of poliomyelitis. They conclude that immunity to the poliomyelitic virus, as indicated by the presence of antivirus, is frequently present in normal people who have been in contact with definite cases of the disease without developing it. They quote the work of Anderson and Frost (1911) who, in seven normal individuals (employed as controls in investigating the serum of cases of poliomyelitis), found complete neutralisation in one case and partial neutralisation in two cases.

Will you permit me to draw attention to my researches [1] in collaboration with C. Kling on the Swedish epidemic in 1912. We studied the serum of nine normal individuals, of whom seven were close contacts with cases of poliomyelitis and two, children of 14 months and 2 years of age respectively, had never suffered from poliomyelitis or been in contact with cases. In the first series there was complete neutralisation in two cases, partial neutralisation (lengthened incubation period in the monkeys inoculated) in four cases, and no neutralisation in one case. In the second series there was almost complete neutralisation (incubation period of 32 days) in one case and no neutralisation in the other. Thus the serum of certain healthy individuals, most of whom were living in an infected area and—so far as could be judged from clinical manifestations—showed an immunity to the virus, neutralised completely the virus of poliomyelitis in the proportion of almost a third, and partially in the proportion of 5 : 9. We concluded that microbicidal properties which totally or partially neutralise the virus of infantile paralysis are present in the serum of individuals who have been living in intimate contact with cases of poliomyelitis without developing the disease. Their immunity could therefore be attributed to the presence of these microbicidal substances in the blood. We also stated our opinion that the immunity was due to latent infections, the organism reacting to the virus only by the production of antibodies, or, in some instances the immunity followed the abortive form of the disease that had not been diagnosed as such.

These results explain the unequal receptivity of human subjects to the virus of poliomyelitis during the course of epidemics.

I am, Sir, yours faithfully,

Dr. C. LEVADITI,
Paris, Dec. 2nd, 1930. Professeur à l'Institut Pasteur.

PREVENTION OF SCARLET FEVER IN SCHOOLS.

To the Editor of THE LANCET.

SIR,—May I be permitted to add to my first letter in view of Dr. Glover and Dr. Griffith's communication. The object I had in mind was, as I stated, to correct the impression which their paper inevitably created—viz., that nothing could be done to stop an epidemic of scarlet fever in a school. Their statement was that passive immunity is too evanescent for use in a boarding school, that it has the disadvantage to sensitise to serum (we have now fortunately Dr. Dunn's account of the use of this method by him at Uppingham, *a boarding school*, for the last three years with complete success, upon which I wish to congratulate him), and that the production of active immunity by the Dick method took too long and was too uncertain; these pronouncements, coupled with their admission that the ordinary

[1] Annales de l'Institut Pasteur, 1913, xxvii., 839.

methods of isolation, disinfection, &c., which were carried out very carefully were disappointingly unsuccessful, and the fact that bacteriology in their hands (and it could not have been done more efficiently) was found to be of no practical value, led to the inevitable conclusion that nothing in fact is of any use to control an epidemic of scarlet fever in a school. I quoted my experience at the day school not for comparison with theirs, but to demonstrate that it had been done; readers will draw their own conclusions and these will naturally vary with their apperceptions.

I referred to the Dicks, and I may perhaps usefully add further that: [1]

"They have had an opportunity to employ this method of controlling scarlet fever in 218 families in which scarlet fever had occurred and in epidemics in four different institutions. No new cases of scarlet fever developed in these families or institutions later than 48 hours after the control of the epidemic was undertaken, except in instances where for some reason it was not possible to follow the prophylactic administration of antitoxin by active immunization with the toxin before another exposure to immune carriers or the return of the convalescent scarlet fever patient to the home."

Such work by the Dicks cannot be dismissed as being of no significance. The uncertainty about active immunity against scarlet fever (which was mentioned) has been shown [2] by Toyoda and Futagi to be due not to the non-establishment of immunity, but to the inaccuracy of the Dick test, as usually performed. They demonstrated that the Dick test toxin consists of a heat labile and heat stabile portion, which they separated, and that the heat labile toxin only is the true indicator of susceptibility to scarlet fever, heat stabile toxin often giving allergic skin reactions, mistaken for positive reactions, in those subjects who were immunised against streptococci or scarlet fever.

But if we have been erring, we have been erring on the right side, assuming, as we did some to be susceptible who were in fact immune, because the negative Dick test with whatever Dick toxin produced did and still does indicate immunity to scarlet fever.

I am, Sir, yours faithfully,

W. EDGE,
Medical Superintendent, Ladywell Sanatorium (Infectious Diseases), Salford.

Dec. 8th, 1930.

VALUE OF RAMISECTION IN CASES OF SPASTIC WEAKNESS.

To the Editor of THE LANCET.

SIR,—In his address delivered at the opening of the Banting Research Institute of Toronto University (THE LANCET, Oct. 11th, p. 779) Lord Moynihan was unfortunate in his choice of the researches of Hunter and Royle to illustrate "the somnolence of physiologists."

Hunter and Royle were attracted, as others have been before them, by the idea of a dual innervation of skeletal muscle, and particularly by the suggestion that the sympathetic nervous system might be responsible for the maintenance of postural or "plastic" tone. They performed a number of experiments on goats and pigeons, and they drew conclusions which were entirely at variance with those which had been arrived at by physiologists and others working in the same field. They admitted this, but they claimed that the *clinical* results of sympathetic ramisectomy in human beings were so remarkable that physiologists would be compelled to alter their views on the physiology of muscle and bring them into line with their own.

As soon as this work was published, some of us performed sympathetic ramisectomy in a number of carefully selected cases of spastic paralysis, with every possible precaution against technical error, and we failed to get any results comparable to those claimed by Royle. But, even before we operated on these cases, we were met with the unanswerable argument that anyone who did this operation and failed to get the results which Royle described was either an incompetent surgeon who failed to divide the sympathetic rami, or an indifferent neurologist who could not interpret the signs.

In the face of this argument there was only one thing to do, and we did it. We, a group of orthopædic surgeons and a neurologist, got hold of Royle when he was in this country in 1927. We took him down to Carshalton and gave him a free choice of a large number and variety of cases of spastic paralysis, and of these he selected six which in his considered opinion were suitable for the operation of sympathetic ramisectomy. The selection was made with care and deliberation, since the avowed object of the ensuing operations was to demonstrate to us and convince us of the remarkable results of sympathetic ramisectomy in cases of spastic paralysis. We examined these cases with Royle before operation, we made him operate upon them in our presence, we examined them again with him soon after operation, and lastly we examined them again two years later. The results of these investigations were briefly recorded in THE LANCET of July 19th, and it will be seen that they fail to substantiate in any particular the physiological conclusions of Hunter and Royle.

There, so far as we are concerned, the matter rests. Royle objects to our drawing "sweeping conclusions" from a small number of cases, and he would rather have us accept without question his own estimate of cases which we have not seen and which we have no opportunity of judging on their merits. We, however, prefer to believe the evidence of our own senses, and reports of hundreds of "successful cases" from America and elsewhere leave us cold.

In your issue of Nov. 29th Royle reiterates his one and only reply to criticism—namely, that we are incapable of doing the operation or of interpreting the results. He starts badly by repudiating his one-time friend and colleague, J. I. Hunter, since he objects to our coupling the name of Hunter with his own. We are aware that Royle got his first paper into print a few months before Hunter published his. But, in this same paper, which lies before me as I write, Royle says:—

"In conclusion, I wish to express my indebtedness to Prof John I. Hunter for his assistance in arranging the plan of experiments and for his constant advice and help in interpreting the results obtained. He also rendered invaluable assistance in planning the surgical operations. The experimental work was carried out in Prof. Hunter's laboratories."

We may not agree with the physiological conclusions of this brilliant young anatomist, but those who know the work of both these men have little doubt that the operation of sympathetic ramisectomy would never have originated in Sydney without the help and inspiration of J. I. Hunter.

Royle now asks us "which operation in the lumbar region produces a diminution of tone in the lower limbs and for what length of time?" The answer, as he well knows, is any major operation, and for

[1] Acute Infect. Diseases, Schamberg and Kolmer, p. 461.
[2] Jour. Infect. Dis., March, 1930, p. 196.

about a week or more. In his original paper already referred to (page 10 of the reprint) he writes:—

"The handling of the tissues in this (the lumbar) region could profoundly affect reflex activity within a few days following the operation and the changes then seen could not necessarily be ascribed to the removal of the sympathetic trunk."

This is precisely what we have observed both in our own cases and in those operated upon by Royle. But we have allowed for this obvious source of error in estimating the end-results of his cases, while he has not. He says, for example, that in Case 4 of our report "Ramisection produced *immediate* improvement in range of movement and alteration in reflexes." We know it did, but that has nothing to do with the end-result which was a complete failure. Some at least of the records which have been used to illustrate the results of ramisection were taken within a few hours of the patient's coming round from the anæsthetic, and to our knowledge the temporary improvement then noted has not been maintained.

The time has come for plain speaking. (1) The operation of sympathetic ramisectomy for the *relief of spastic paralysis* is based upon an unsound physiological research, and it is a complete failure. (2) It has been "boosted" as I believe no other operation has been in our time. (3) Faultlessly performed by Royle himself in cases of his own selection, it has under accurate observation entirely failed to vindicate the claims which he has put forward for it. There is no evidence that the sympathetic nervous system is responsible for the maintenance of postural or "plastic" tone in skeletal muscle, and division of the sympathetic rami communicantes does not confer any lasting benefit on patients suffering from spastic paralysis. There would therefore appear to be no justification for its performance in such cases. (4) Royle, with the "invaluable assistance" of J. I. Hunter, devised a technique for dividing the sympathetic rami communicantes. This is a purely technical achievement and has nothing whatever to do with physiological research. Every student knew before that division of sympathetic nerve-fibres would produce a corresponding vasomotor paresis, though, I would add, this is not necessarily obvious in the coarse skin of some hospital patients. (5) It may well be that sympathetic ramisection has proved or will prove to be of benefit in certain cases of vascular disturbance and perhaps in some other conditions, such as arthritis, in which a more or less permanent vasodilatation would appear to be desirable. But this again has nothing to do with the physiological problem of postural or "plastic" tone in skeletal muscle.

I am, Sir, yours faithfully,

A. S. BLUNDELL BANKART.

Harley-street, W., Dec. 6th, 1930.

DIAGNOSIS OF PULMONARY TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—In his Mitchell lecture Dr. Burrell shows how each symptom of tuberculosis settles down into a truer and saner place. Take hæmoptysis, for example; even 20 years ago this was treated with ice-bag and absolute rest; to both physician and patient it was almost the signal for the nearest undertaker. Look at the picture now. The advent of artificial pneumothorax, done with the promptitude made possible by the motor-car, has completely changed the outlook for a majority of cases. I cannot agree with Dr. Carver that the physician is apt to be misled by hæmoptysis resulting from gingivitis; if Dr. Burrell's common-sense way of dealing with a case is employed the diagnosis should be simple enough. We have, indeed, materially advanced in our conception and treatment of pulmonary tuberculosis in spite of what is said so often to the contrary.

I am, Sir, yours faithfully,

J. D. MACFIE.

Winsley Sanatorium, near Bath, Dec. 3rd, 1930.

To the Editor of THE LANCET.

SIR,—We should all be grateful to Dr. Burrell for his excellent summary of the chief diagnostic points in pulmonary tuberculosis. I am particularly glad to see his reference to the value of a negative sputum. It has always appeared to me very unlikely, after carefully examining a "real pussy spit" two or three times, and finding it negative for tubercle bacilli, that the underlying lung trouble was tuberculous.

I would be grateful for an opinion from some authority as to the importance to be attributed to one symptom not mentioned by Dr. Burrell. I refer to disturbance of the menstrual function. It may be said that there are many other diseases which cause this symptom, but then the same thing may be said of cough. When a young girl comes to me with some of the other symptoms of the disease, and in reply to a leading question about her menstrual health, says that there is some disturbance (usually absence), I take it as a point in favour of a positive diagnosis. On the other hand, if she says she is all right that way, and if, nevertheless, she is diagnosed as pulmonary tuberculosis, I would expect her to do better than a similar case with amenorrhœa.

I am, Sir, yours faithfully,

P. J. BURKE,
County Tuberculosis Officer, Sligo.

Central Tuberculosis Dispensary, Sligo, Dec. 3rd, 1930.

OCULAR NEUROSES AND SO-CALLED EYESTRAIN.

To the Editor of THE LANCET.

SIR,—Your annotation on Dr. G. S. Derby's paper (THE LANCET, Nov. 22nd, p. 1136) raises questions affecting public policy which need an authoritative answer. Dr. Derby is not the first to point out that eyestrain is not responsible for many of the troubles usually accredited to it. His distinguished countryman, Dr. J. J. Putnam, expressed the same views over ten years ago. In regard to treatment Dr. Derby says it is rarely necessary to call in a trained psychologist. That may be so in private practice, but it is an interesting speculation as to what would be the result of the examination of (say) the 140,000 school-children for whom, according to a statement made in the House of Commons last month, glasses were provided in 1929, if a trained psychologist were asked to separate the sheep of unblemished ophthalmic importance from the goats of neurotic ophthalmic masquerading. Dr. Millais Culpin, an unprejudiced and cautious observer, in his investigations on behalf of the Industrial Fatigue Board, has for a long time accepted the wearing of weak convex glasses for distance as a symptom of a neurotic disposition. I much doubt if the complacency of

orthodoxly conducted eye departments of school clinics would survive his report. There are certainly many cases in my department which I should dearly like to pass on to the trained psychologist.

Further, now they are getting hard up, the friendly societies might with advantage ask for such a report on their members before spending their money so freely on optical benefit without expert guidance. Lastly, it might cause those responsible for the public weal to hesitate before letting loose State-registered opticians upon a public already deluded by a medical myth. Let it not be forgotten that only a few years ago serious claims were being made that miners' nystagmus was due to errors of refraction. Yet no one smiled.

I am, Sir, yours faithfully,

Portsmouth, Dec. 7th, 1930. W. S. INMAN.

THE CHARTERHOUSE RHEUMATISM CLINIC.

To the Editor of THE LANCET.

SIR,—Dr. Congdon has set forth certain figures which emerged in the attempt to determine the value of vaccine treatment in cases of rheumatoid (infective) arthritis. Very little difference is shown between the treated cases and the controls, a result which is in full accord with the adverse opinion generally held in regard to the method. In her series of 330 cases, vaccine treatment failed. Assuming that this failure was not due to technique, bacteriological or nosological, then her figures are confirmatory of the view (which I first published in 1914) that true rheumatoid arthritis is not primarily caused by a streptococcus but by a white staphylococcus, which I then named the *S. epidermidis albus* var. *deformans*, or more shortly the *Micrococcus deformans* (of which, as Dr. Graham-Bonnalie states in his letter of last week, there are two types). If my view is correct, then failure to benefit the disease by vaccines of a non-causative organism, such as a *Streptococcus viridans*, has no bearing whatsoever on the value of specific vaccine treatment. It merely serves to show that non-specific vaccines are of no great value in the treatment of this type of disease.

My personal experience is the exact opposite of Dr. Congdon's. Rheumatoid arthritis responds extremely well to vaccine treatment, and if taken in time should never fail to be cured. The sooner this fact is recognised the better, for, with the exception perhaps of osteo-arthritis of the hip-joint, there is no form of rheumatic disease so refractory to ordinary treatment, or more frequently made worse by misguided attempts at alleviation. Nor is there any disease which is more terrible in its results—attacking as it does young people in the prime of life and turning them into bedridden cripples. Fortunately, however, true rheumatoid arthritis is a comparatively rare disease. Only about 5 per cent. of the cases at the Charterhouse Rheumatism Clinic are of this type. Of these all the early cases have done well, and even some advanced cases have recovered sufficiently to resume their occupations. Dr. Congdon's criterion of "improvement before treatment" does not apply at the clinic, as all cases, practically without exception, are getting worse when they first attend. Then there is the question of environment. The advantage here is all on the side of the Devonshire Hospital. Patients, whether in the wards or attending as out-patients, must mostly be away from their usual surroundings, whereas those attending the Charterhouse clinic, if too crippled to carry on their ordinary avocations, are at least living in their usual, often most unfavourably situated homes.

Osteo-arthritis, mixed arthritis, and fibrositis constitute the enormous majority of our cases, but in Dr. Congdon's opinion these types are too diversified for examination by the usual mathematical methods, and could not count in any case because their infectious nature is not generally recognised. Nor was that of tuberculosis 50 years ago. The medical staff at the Charterhouse clinic is working on the hypothesis that osteo-arthritis and fibrositis are infective diseases and as such should be amenable to vaccine treatment. The answer to the objection that no statistical judgment is possible surely must depend on the form of treatment to be judged. Where this is expectant or entirely symptomatic, diverse types must be recognised for statistical purposes. But in specific vaccine therapy the classification becomes bacterial and types no longer matter. For example, lobar pneumonia and an arthritis due to pneumococci, however diverse in type, could both be classified statistically as pneumococcal infections. In the same way at the Charterhouse Rheumatism Clinic we group osteo-arthritis and non-articular rheumatism as mainly streptococcal diseases, and rheumatoid arthritis as mainly staphylococcal, thus not only simplifying the whole conception but rendering all types, however diverse in appearance, suitable for simple statistical treatment.

As evidence in favour of the bacterial hypothesis we adduce our experience that, almost without exception, "reactions" follow individual doses of streptococcus vaccine in nearly every case of osteo-arthritis and of fibrositis, just as occurs in the tuberculin test, but—and this adds to the significance—with very much smaller doses when measured in dried weight of bacterial content. We are completely satisfied that the results at the clinic are due to our making this hypothesis the basis of our treatment. Added to this, as Dr. Graham-Bonnalie says, we have recognised that the whole body may be involved in the rheumatic process, in consequence of which dosage must be far lower than it would be in any less generalised complaint.

I am, Sir, yours faithfully,

H. WARREN CROWE, D.M., B.Ch. Oxf.

Portland-place, W., Dec. 8th, 1930.

TWINNING IN MONGOLISM.

To the Editor of THE LANCET.

SIR,—Dr. Coupland asks for the number of known instances of twin-births, in which one twin is mongoloid and the other normal. The best recent paper is, perhaps, that by Macklin (*Amer. Jour. Med. Sci.* 1929, clxxviii., 315), in which a list of about 38 such are given; but lately others have been added. There is, however, reason to believe that the number of cases known is but a fraction of those that have occurred during the last 30 years. It is desirable that anyone reporting future instances should remember the three distinctions that can be made. Thus: the birth may be (1) uniovular or binovular (2) heterosexual or homosexual; and (3) monomongoloid or bimongoloid. Monomongoloid twin births are, apparently, always binovular, but may be heterosexual or homosexual. It should be, but is not, superfluous to insist that a reporter should always give his reason for considering a particular twin to

be "normal" or mongoloid. Unfortunately, it is becoming fashionable to describe as a "mongol" almost any child of undifferentiated ethnic type with general fœtal characteristics, in forgetfulness of Langdon-Down's own definition of the class he described. This definition it is our duty and our right to conserve.

The question of twinning in mongolism is discussed at some length in an entirely rewritten version of my book "The Mongol in our Midst," which will be published by Messrs. Kegan Paul and Co., in a few days.

I am, Sir, yours faithfully,

F. G. CROOKSHANK.

Wimpole-street, W., Dec. 6th, 1930.

MEDICINE AND THE LAW.

Statistics of Criminal Abortion.

THE Criminal Statistics for Scotland for the year 1929 (recently published as Cmd. 3699) give the usual tabular information as to the common-law offence of procuring or attempting to procure abortion. The total number of cases made known to the police in the year was seven. One man and six women were proceeded against; one woman was discharged and not called for trial, another was released on a verdict of "not proven." The rest were convicted and sentenced to imprisonment or in one case penal servitude. The Scottish statistics of criminal abortion are low. The average number of such crimes charged annually in the quinquennial periods ending in 1914 and 1924 was only 2 and 5 respectively; the total of such charges for the past five years have been 4, 9, 5, and 7. For England in the corresponding quinquennial periods ending 1914 and 1924 the figures for this offence known to the police were 40 and 48, while the number of persons actually tried was 30 and 2. The 1929 statistics for England are not yet available. The annual totals for the years 1925 to 1928 are far more substantial than the Scottish totals—namely, 86, 55, 74, and 113 known to the police; and 62, 41, 44, and 74 persons actually brought to trial. The introduction to the English Criminal Statistics for 1928 admits that the rise in 1928 over the quinquennial average for 1910–14—(i.e., the rise from 40 to 113) "no doubt reflects a real increase in this offence."

Criminal abortion is notoriously an offence difficult to prosecute to conviction. It is not committed *coram publico;* the women who have employed the services of an abortionist are reluctant to come forward, and, when they do, their evidence requires corroboration because they are in a sense accomplices with the accused person. It is thus the less surprising that in England in 1928 only 74 cases were brought to trial out of 113 known to the police, and only 57 out of the 74 prosecutions resulted in a verdict of guilty." Out of this array of figures the simple fact emerges that, in the latest year for which statistics are available, there were only 57 criminal abortionists in England and only five in Scotland. If the medical practitioners of Great Britain met in camera to estimate a total in the light of their own information and strong suspicions, what would that total be?

Unsuccessful Action for Medical Fee.

A medical practitioner obtained judgment against a widow in the Bow County Court for £1 11*s.* 6*d.*, his professional fee for attendance on her late husband. Last week the defendant applied to set aside the judgment and to obtain a new trial. According to her statement her husband had been taken ill at 3 A.M.; she had sent in to her next-door neighbour to fetch the panel doctor. Another practitioner arrived half an hour after her husband had died; the widow stated that she at once told him that he was the wrong doctor. The practitioner who was thus brought on the scene and who had made the claim for an attendance fee was unable to say who had sent for him; he understood the police had been called in. Judge Owen Thompson, K.C., said that without question the plaintiff practitioner had earned a fee from somebody; the question was from whom. His honour said it looked like a police call. He sympathised with the practitioner, but the circumstances did not make the widow liable. If, said his honour, I grant the widow a new trial, the practitioner does not stand much chance of winning, as he was not called by the widow's authorised agent. In the circumstances the plaintiff doctor decided not to proceed with the action. The judge seems to have assumed that the practitioner was called in by the police; if he had been called in by the next-door neighbour, he would presumably have been summoned by the widow's authorised agent.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments are announced: Surg. Lt.-Comdr. C. H. Savory to *Pembroke*, for R.N. Hospital, Chatham; Surg. Lt.-Comdr. (D.) F. W. Paul to *Pembroke*, for R.M. Infirmary, Deal; Surg. Lts. W. C. Sloan to *Warspite;* G. D. J. Ball to *Victory*, for R. M. Infirmary, Portsmouth; and G. A. Miller to *Dahlia.*

ROYAL NAVAL VOLUNTEER RESERVE.

Lt.-Comdr. L. L. Withrington to *Champion.*

Proby. Surg. Lt. (D.) F. J. Goldsworthy to *Victory*, for R. N. Hospital, Haslar.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. B. H. V. Dunbar, from R.A.M.C., to be Col., vice Col. A. H. Safford, to retd. pay.

Maj. A. H. Bond to be Lt.-Col., vice Lt. Col. B. H. V. Dunbar, promoted.

Capt. L. Game relinquishes his temp. commn.

Temp. Capt. Michael J. Whelton to be Maj.

ARMY DENTAL CORPS.

W. E. Duckworth to be Lt. (on prob.).

ARMY RESERVE OF OFFICERS.

Lt. L. P. Clarke from Reg. Army Res. of Off., Norfolk Regt. to be Lt.

TERRITORIAL ARMY.

Maj. F. R. Harris to be Lt.-Col. and to comd. 140th (C. of Lond.) Fd. Amb.

Capt. G. Whittaker to be Maj.

Lt. W. H. G. Park to be Capt.

DEATHS IN THE SERVICES.

The murder of Lt.-Col. Norman Skinner Simpson, I.M.S., on Monday last has been announced by telegram from Calcutta. The murder took place in the premises of the Bengal Government, where the offices of the various heads of the departments are situated. According to one report, the murder of Col. Simpson may have been due to the accident of the location of his room, but it must be remembered that previous to his appointment as Inspector-General of Prisons in Bengal, he had been a superintendent in the Gaol Department, and may have been a marked man among fanatics. Col. Simpson, who had a fine professional record, was only 49 years of age.

Surg. Capt. R. J. Willan, M.V.O., O.B.E., V.D., Royal Naval Volunteer Reserve, has been appointed an Honorary Surgeon to the King, vice the late Surg. Capt. A. R. Brailey, V.D.

OBITUARY

FRANK EDWARD NICHOL, M.B., B.Chir. Camb.

WE regret to announce the death of Dr. Frank Nichol, the well-known Margate practitioner, which occurred on Nov. 28th at his house in Cliftonville.

Frank Edward Nichol was born in 1861, was educated at Dulwich College and Caius College, Cambridge, and made a mark both at school and college as an able student and a vigorous athlete. He proceeded from Caius to St. Thomas's Hospital, took the double English qualification in 1885, and graduated M.B., B.Chir. Camb. two years later. He served as house surgeon at his hospital, and also as clinical assistant in the dermatological department, after which he took up his residence in the town where he has died, to the deep regret of a neighbourhood which he had served faithfully for 40 years. For while attending assiduously to a large private practice he found time to be a leader in all the movements for the welfare and progress of the town. His gift of public speaking, and his musical talent stood him in good stead in these public movements. For many years he was surgeon to the Margate Hospital, and on the medical staff he was a tower of strength. He was medical officer to the Royal School for the Deaf, to the West Ham Union Convalescent Home, the Victoria Home for Invalid Children, and the Royal Sea Bathing Hospital, and at every one of these institutions he earned appreciation not only for ability but for generosity in attitude and action. The erection of the new Margate Hospital, a development of the old Cottage Hospital, was largely due to Nichol's recognition that such an institution was needed to meet the growing population of Margate, and especially the increasing motor traffic. He worked hard and well on behalf of the new venture, and the success of the scheme from the beginning was greatly due to his public and professional qualities. With the hospital he had been officially connected since his election to the staff in 1897, and his retirement was the occasion of an eloquent expression of admiration from the committee of management, at whose instance one of the wards was named the Nichol ward.

Although he took no part in municipal administration he was a valued counsellor of those who did, and so clearly was he marked out as a man of affairs that the proposal was made to him that he should offer himself as the representative of the Isle of Thanet in Parliament. From the party point of view the idea was a thoroughly sound one, and Nichol's candidature would probably have been followed by a successful election, but he considered that parliamentary duties would have been impossible without relaxation of other energies, which he held to be impossible. He was on the borough bench of magistrates, had been president of the Margate Chamber of Commerce, and a valued member of the Rotary Club. During the war he may be said to have almost lived in the hospital when the younger men were necessarily absent, a devotion which was recognised by his election as President of the hospital, and in addition to his professional duties he found time to go into training, as an honorary captain, with the South Eastern Mounted Brigade, Field Ambulance, R.A.M.C. Dr. Nichol's death followed a considerable period of ill-health, though it occurred just as he returned to work. He married, in 1891, Annie Lilian Price, the daughter of Dr. William Price of Margate, who survives him, and by whom he had four children—three sons and one daughter. The second son was killed in the war, and the third died just after the war, while the eldest son, Dr. Robert Nichol, was a partner in the Margate practice. Dr. Nichol's daughter is married in Rhodesia.

ANDREA RABAGLIATI, M.D., F.R.C.S. Edin.

Dr. Rabagliati, who died at Ben Rhydding on Sunday in his eighty-eighth year, was one of the best known figures in Bradford for 50 years or more. His father was an officer in the Italian army, who sought refuge in Scotland after an unsuccessful revolt against Austrian rule. Capt. Rabagliati spent some time in the manse at Kelso, read Italian with Sir Walter Scott at Abbotsford, married a Highland lady and settled in Edinburgh, where Andrea Carlo Francisco was born in 1843. Andrea was educated at Edinburgh High School, went to a clerical uncle in Demerara for two years, and returned in 1862 to study medicine at Edinburgh University. He graduated with honours in arts in 1867 and in medicine in 1869, taking the M.D. three years later with gold medal for a thesis on relapsing fever. On graduating he went as assistant to Dr. Leeson, medical officer to the Bradford workhouse. At that time Bradford had less than half its present population and, as Dr. Rabagliati used to say, appeared to consist of a few employers and a large number of employed. After two years as house surgeon to the infirmary he began practice on his own account, soon becoming hon. surgeon to the infirmary, assistant surgeon to the Eye and Ear Hospital, and medical officer to the Fever Hospital. In conjunction with Dr. Burnie and Dr. Harry Meade he helped to found in 1882 the Children's Hospital in Hanover-square, which was the nucleus of the present hospital built and opened in 1890. He was instrumental in founding, with his wife's untiring help, St. Catherine's Home for Cancer, to which he was appointed consulting surgeon. He was also consultant to the Bingley Hospital, the Actors' and Music Hall Artistes' Associations, and consulting gynæcologist to the Bradford Royal Infirmary.

Although holding surgical appointments, Dr. Rabagliati's bias was always towards medical practice, especially on questions of diet. The publication of his numerous medical books brought him a large consulting practice on these lines, and he was frequently urged to confine himself entirely to such, but he believed he could do more good by the general care of patients, although latterly consulting work and ever-increasing correspondence left him time for little else. He continued to practise without intermission, taking but few holidays, from 1872 up to his eighty-seventh birthday in May, 1930, when he was first taken ill.

In 1877 Dr. Rabagliati married Helen Priscilla, youngest daughter of the late Duncan McLaren, M.P. for Edinburgh, by whom he had four sons and one daughter. His eldest son, who practised surgery in Natal and Nairobi, died last year. Another son is a veterinary surgeon.

Dr. Halliday Sutherland writes: "Dr. Rabagliati was remarkable alike for his character and ability. He lived beyond the allotted span, and early in his life had sacrificed a large practice by reason of his views

n diet, which were not then appreciated either by his ollеagues or by the public. Yet he held these views o the end of a long life, and lived to see Guelpa, of aris, introduce a method of detoxication based on rinciples in no way different to his own. By diet, more accurately, by starvation, Dr. Rabagliati otained many remarkable results in chronic ailments. s his views made headway, practice gradually turned, and even during the past year patients had me from America to consult him. He published veral works which never made a wide appeal. is was partly due to the style in which they were itten. They reminded one of the spacious days of denham, when men wrote leisurely and at length. e had also a fondness for coining new words, based Greek roots, which were rather puzzling to those thout a classical education. His interest in medicine as maintained to the end, and what hurt him even re than the malady of which he died was the owledge that it interfered with his practice. When e rôle of the lymphatic system in the causation of ease is better known Rabagliati will be remembered a pioneer."

THE LATE DR. BILAND OF DAVOS.

Dr. J. Biland, who died in his sleep on Oct. 28th, had been medical director of the Davos Dorf Sanatorium since 1916, and was one of the directors of the Swiss Institute for Medical Research at Davos. Born in 1877, in the Canton of Glaris, he was educated at Neuchâtel and studied medicine at the Universities of Zürich and Berne. He was then, in succession, assistant to Kocher, at Berne, and Lichtheim, at Königsberg. He passed the Italian State examinations when he was in charge of the Sanatorium Ambri Piotta. At the outbreak of war he worked at a German Red Cross hospital with Dr. Bernhard, of Samaden. On his return to Switzerland he was appointed medical officer to the interned prisoners who were stationed at Davos, and a considerable number of British officers were sent to his sanatorium at Davos Dorf by the British Red Cross Society. Dr. Biland was an able and popular lung specialist who enjoyed the affectionate regard of patients of many nationalities. He spoke nearly all European languages fluently.

PANEL AND CONTRACT PRACTICE

"A Second Opinion."

THE question of how best to safeguard the funds friendly and other sickness societies continues occupy much space in their official review. The *tional Insurance Gazette* published last week a ther instalment of Sir Alfred Watson's address the Institute of Actuaries, which dealt with work of medical referees under the National alth insurance system.

"It would have been difficult," Sir Alfred said, few years ago to urge on friendly societies, with success, the advantage of obtaining a 'second nion' in cases of doubt as to the genuineness of apacity, but in view of the establishment by the istry of Health of a corps of 'medical referees' whose services there is a wide and growing resort the approved societies, this instrument of control become familiar, and the actuary who is called n to deal with the consequences of a heavy rate ickness should not find it difficult to press for its lication in doubtful cases. It is, however, ndantly clear that friendly societies cannot rd, and probably never will be able to afford, to ard the additional weapon of defence with which reduction of sickness benefit in protracted cases s them."

aking up this point in its editorial columns the *tte* remarks: "A good many societies, mainly e operating in a restricted area around their tered offices, can, with advantage, employ a ical officer of their own. This officer does what kness visitor does, and does it better. Claims ubmitted to him on receipt, and within 48 hours otifies the result of his investigation—perhaps ally in the first instance (to save delay) but equently in writing, because documentary nce will be required in the case of disputes. know at least two societies which employ such cal officers—and with a very great saving to funds. Obviously, there can be no better way eeting the short duration claimant, who is such nace."

Sickness Benefit on Tyneside.

a recent meeting of the Newcastle-on-Tyne ance committee it was reported that the 108,000 insured persons in the county borough shared 539,342 prescriptions, dispensed by panel chemists at a cost of £17,290, and incurred doctors' fees of £48,100. Anxiety was expressed in the committee at the increasing cost of sickness benefit. The panel committee has, however, made it clear that there is in their opinion no question of malingering. According to the *North Mail* a representative of this committee has said:—

"The increased cost is due in no small measure to the pressure of economic circumstances on insured persons, who formerly would not go to their panel doctor for free treatment, but preferred to consult another doctor and pay as private patients. That prejudice against the scheme has been broken down now. What is more, it is due in part to officials of approved societies who send their members to us to demand benefits to which they are not necessarily entitled. People are now thoroughly acquainted with the Act, and are seeking benefits of which formerly they had no knowledge. We claim that the actuarial calculation of sickness was wrong in the first place.

"The costs," he went on to say, "are not as heavy as they ought to be. Men receiving the dole draw the employment exchange benefits as long as they can, then come to us for a few weeks and get sickness benefits during the employment exchange 'waiting period,' and, when that is ended, they return to the dole. Those men are not malingerers. They are not getting anything they are not entitled to. They ought to be receiving sickness benefits all the time, and would be doing so if they could afford to sacrifice the dole, which is on a higher scale. They are not physically fit for work."

HOSPITAL ACCOMMODATION AT STOKE-ON-TRENT.—On Friday last Mr. Arthur Greenwood, the Minister of Health, laid the foundation-stone of extensions to the Hartshill Maternity Homes. The scheme is of considerable dimensions, but the immediate enlargements will comprise 60 beds and a new theatre. On the same day Mr. Greenwood opened a new cubicle block at the infectious diseases hospital at Bucknall, which has been erected by the Stoke-on-Trent City Council. The block, which has cost £5750, contains 12 single-bed cubicles. At present this hospital has 192 beds in 14 wards, and when the scheme of enlargement is completed there will be 282 beds.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

ACCIDENTS IN MINES.

IN the House of Commons on Wednesday, Dec. 3rd, Mr. SUTTON moved :—

That this House deplores the heavy loss of life and the large number of non-fatal accidents in coal mines and urges the Government to take every possible measure for the protection of those engaged in this dangerous industry.

He said that the number of deaths and accidents in the mines was increasing every year. H.M. Inspector of Mines in his report for 1929 stated that 985 persons working underground were killed, an increase of 100 over the previous year. The number injured underground was 162,230, or an increase of 13,098 on the previous year. The Secretary for Mines in reply to a question had stated that over 800 deaths had occurred in the mines during the ten months of 1930. A large number of committees had been inquiring into this matter for some years past, but not much progress had been made ; in fact they seemed to be going back. In the report of His Majesty's Inspector for 1929 it was stated that there were 12,651 persons injured on the surface, or an increase of 837 as compared with the previous year. There were in the mines of this country 29,000 boys under 16 years of age working underground. Last year the number of boys under 16, according to figures given by the Chief Inspector of Mines, who were killed or injured was at the rate of 251 per 1000 boys employed. In the case of boys between 16 and 18 the rate was 230 per 1000, and of those between 18 and 20 223 per 1000. In the case of those aged 20 and over the rate was 209 per 1000, while for all ages it was 212 per 1000. He hoped the Secretary for Mines would make a note of these facts. During the past eight and a half years some 10,440 persons had been killed in the mines of this country, or an average of well over 1000 a year. In those eight and a half years 1,587,330 persons were injured in the mines, apart from the 10,440 who were killed. He earnestly appealed to the Government to investigate this matter very carefully, particularly as it affected the boys.

Mr. TINKER, in seconding the resolution, said that if the law was carried out with regard to ventilation in the mines many of the accidents would be prevented.

After further debate,

ASCERTAINMENT OF CAUSES.

Mr. SHINWELL (Secretary for Mines) said he was as anxious as any miner or any Member of the House to promote the well-being of the mining industry and the safety of the miners, and he desired as a line of approach to a solution of the safety problem to secure the coöperation of both sides of the industry, and to focus the attention not only of mining officials but of miners themselves on the various aspects of this problem, more particularly in relation to the proper observance of the regulations laid down by the Department. He did not question the figures which had been given in the debate. He was more than familiar with statistics relating to the mortality-rate among miners, and the remarkably high accident-rate. He was deeply concerned about the matter, particularly in view of the fact that in recent years he detected not a diminution, but an increase in the rate. Although progress had undoubtedly been made in the direction of promoting safety they could not regard the existing condition with complacency. He was far from complaining about the orthodox methods employed by the industry and his Department in recent years. They had all tended to promote greater safety, but relatively speaking they found in the official figures a higher accident-rate and a higher mortality-rate—much too high a rate in the circumstances. If they were to approach this problem wi a view to finding as complete a solution as possib they must first ascertain the cause of the accident Recently in his spare time he had analysed t principal types of accidents occurring in the mine He found that the majority of accidents occurred a result of the fall of roof or side. The second ma cause of accident, which applied also to the mortalit rate, was haulage. The third was due to explosio of coal dust or fire damp, and these were relative low.

He was not concerned about defending what w now being done for the promotion of safety in t mines except to say that he believed considerab progress had been made, and that no complai could be laid at the door of the Inspectorate of t Department. To find a remedy the first thing requir was to secure the greatest measure of coöperation the industry, and in that he had succeeded in son measure. As far as the employers were concern there was every reason why they should coöperat They paid in 1928 in compensation £3,026,678, a he understood that that was almost 50 per cent. the total amount paid in workman's compensati in the seven great groups of industries in this count for which returns were obtained under the Act 1925. That meant something like fourpence or fiv pence a ton on coal, and when they spoke of t burdens resting on the coal industry they mig consider that particular burden. The Miners' Feder tion had agreed to set up a subcommittee to a with officials of the Mines Department in the di cussion of the problem. That subcommittee ha already dealt with a variety of subjects. The Mini Association had responded most readily that the should coöperate in the discussion of the proble They had set up a subcommittee, but only o meeting had been held to date. They had dealt wit silicosis and other important matters. This coöper tion between employers, the miners, and his Depar ment would continue. He did not wish at this sta to press either side unduly in a direction of reachi decisions, although wherever the Department sa points of agreement they would utilise them.

ILLUMINATION AND NYSTAGMUS.

Sir HENRY BETTERTON : Are the non-ferrous min like tin and lead represented, or only coal mines ?

Mr. SHINWELL said they were dealing with co mines alone, but he would be very happy if the requested him to give consideration to the no ferrous mines. He thought it was desirable to ha more education in relation to safety. There cou be no doubt that one cause of accidents in min was the familiarity with conditions. It was essenti to promote greater care. It was impossible at th stage to promote further mining legislation. The had succeeded in taking a definite step in one part cular direction—namely, the provision of mo efficient illumination in the pits. So far as researc had gone, although there was a difference of opinio it was generally agreed that nystagmus cases we attributable to deficient lighting. It had been su gested that to some extent they might be due the stooping posture adopted by miners and the g in the pits. That might be so, but the bulk of scienti opinion on this subject held the view that inefficie lighting was the primary cause. Therefore th were devoting some attention to the question better illumination. A Draft Order was to be su mitted to the industry for their discussion, and hoped their endorsement. These new proposals relation to mine lighting aimed at a general improv ment in the standard of lighting in three princip directions. First of all there was the raising of t minimum candle power standard of miners' safe lamps, not only the flame lamp but the electr lamp also. They proposed to provide a relaxati

the present drastic statutory restriction upon ethods of lighting other than safety lamps. That as full of difficulties, because there was a dispute to whether the use of electricity in the pits was sirable. They also proposed to secure, if they uld, definite provision for a reasonable standard of rface lighting which hitherto had not been regu-ted by law except for railway shunting operations. ey also proposed to deal with the qualifications of lliery officials generally.

Instead of appointing new inspectors at this stage thought it would be better to relieve the inspec-rate of much of their present work which had no lation to safety at all. If he had his way he would ohibit the employment of boys in mines, certainly der the age of 16, but there were economic causes erating which could not be ignored. He hoped to nsider very shortly the possibility of establishing me form of training for boys. In regard to research, st year there was spent out of the Miners' Welfare nd by the Safety in Mines Research Board more an £50,000 in research. If he found by practical sts that the Ringrose, or any other gas detector, uld be used to benefit the miners, and to secure eater safety in the mines of the country, either by compulsory Order, or by inducing the owners to cept it voluntarily, he would certainly take action. The resolution was agreed to without a division.

HOUSE OF COMMONS.

WEDNESDAY, DEC. 3RD.

Tuberculosis in the Navy.

Mr. MARKHAM asked the First Lord of the Admiralty at number of engineer rating artificers and chief engineer ing artificers had been invalided out of the Service ring 1930 owing to tuberculosis; and whether, seeing at three of them in H.M.S. *Rodney* had been invalided ring the months of August to October, 1930, he could whether the conditions on board were a contributory use.—Mr. ALEXANDER replied: Two chief engine-room ificers, six engine-room artificers, and one apprentice gine-room artificer were invalided from the Service ween Jan. 1st and Oct. 31st, 1930, on account of tuber-osis. Of these one case was of non-pulmonary tuber-osis. As regards the latter part of the question it is considered that the conditions on board are a contri-ory cause, as returns received from the ship to date icate that the general health of the ship's company is y good. Moreover, *Rodney*, one of our latest battleships, constructed entirely in accordance with the most modern nciples and ideas in regard to ventilation and hygiene.

THURSDAY, DEC. 4TH.

Training of Unemployed Women as Nurses.

Sir NICHOLAS GRATTAN-DOYLE asked the Minister of bour how many women had availed themselves during past 12 months of the special provision for the training suitable unemployed women in domestic service, hospital l child nursing, and similar useful occupations, and what l been the result in terms of subsequent employment.—s BONDFIELD replied: The number of women and girls , during the year ended Nov. 24th, 1930, entered train-under schemes controlled by the Central Committee on men's Training and Employment was 4501. During the e period 3635 trainees entered domestic or other work. number in training on Nov. 29th last was 1168.

Local Authorities and Hospital Accommodation.

Mr. JAMES GARDNER asked the Minister of Health if he uld furnish a return for the latest possible date of the nbers and beds, on the lines of the return given in the use of Commons on Dec. 12th, 1929, for hospitals pro-ed by local authorities, with separate figures of insti-ions formerly provided by the poor-law authorities, untary hospitals aided by local authorities, and unaided untary hospitals, giving, if possible, expenditure in each s.—Mr. GREENWOOD replied: The table shows the ition at March 31st, 1930, with the exception of hospitals acute infectious diseases for which the latest available res relate to Dec. 31st, 1929. So far as general hospitals concerned, the information in my Department is that large general hospital, with 875 beds, and three rela-ly small accident hospitals were provided by local horities at March 31st last. Since that date 17 hospitals, h approximately 12,500 beds, which were provided under the Poor Law Acts, have been appropriated as general hospitals under the Public Health Acts, but the expenditure on these hospitals for the year 1928–29 is included in Part *c* of the table below. There are also three poor-law institutions or infirmaries of which parts only have been appropriated as general hospitals. The number of beds in the appropriated parts is not known. Subscriptions or donations made by local authorities in pursuance of Section 64 of the Public Health Act, 1925, amounted in 1928–29 to £30,000. Contributions made by boards of guardians to public hospitals with the consent of the Minister of Health, in pursuance of Section 38 of the Poor Law Act, 1927, amounted in 1928–29 to £38,000.

The information with regard to hospitals of the other classes in England and Wales referred to in the question is as follows:—

(*a*) *Hospitals provided by Local Authorities.*

	Number.	Beds.	Expend. 1928–29.‡
(1) For tuberculosis	166	12,804	£1,865,000*
(2) For acute infectious diseases	987†	36,635†	£3,620,000†
(3) Maternity hospitals (not including maternity wards in general hospitals or poor-law institutions)	80	1040	£268,000§
(4) Babies' hospitals	9	233	

* Including the expenditure in connexion with beds for tuberculosis mentioned in the following note. † At 44 of these hospitals there are 2200 beds for the treatment of tuberculosis. The expenditure on these beds is excluded from item (2). ‡ Expenditure (in round figures) of local authorities in 1928-29. § Including expenditure in respect of maternity sections in general hospitals, and payments to homes for unmarried mothers and their babies, which cannot be separated.

(*b*) *Voluntary Hospitals aided by Local Authorities.*

	Number.	Beds.	Expend. 1928–29.‡
(1) Tuberculosis hospitals	139	9298	
(2) General hospitals—			
(*a*) Used in connexion with tuberculosis schemes	166	—‖	£821,000¶
(*b*) Used in connexion with venereal diseases schemes	130	—‖	Not av.
(*c*) Maternity sections used in connexion with maternity and child welfare schemes	26	279	
(3) Maternity hospitals (not including maternity sections in general hospitals)	64	1337	£114,000§
(4) Babies' hospitals	14	347	

‖ Available beds used as and when required. ¶ Including expenditure of the Welsh National Memorial Association on sanatoria and hospitals.

Not av. = Not available.

The figures under the above headings as to numbers of hospitals and beds are exclusive of accommodation in homes for unmarried mothers and their babies, observation wards in connexion with maternity and child welfare centres, and convalescent homes. Those under *b* (2) (*c*) are exclusive of accommodation used by local authorities in general hospitals for special or complicated maternity cases, as regards which figures are not available.

(*c*) *Institutions formerly provided by Poor-law Authorities.*

	Number.	Beds.	Expend. 1928–29.‡
(1) Institutions wholly for the sick, exclusive of institutions for mental cases	73	40,000	£4,316,000
(2) General institutions (with a total accommodation of some 188,000)	652	83,000(*a*)	£8,880,000(*b*)

(*a*) Beds in infirm and sick wards.
(*b*) Total expenditure on general institutions.

Cancer among Aniline Factory Workers.

Mr. PHILIP OLIVER asked the Home Secretary whether he was now in a position to report on the investigation being carried out by the London Cancer Hospital, with the assistance of the medical inspectorate of the factory department, into the incidence of the disease of cancer of the bladder among workers in aniline factories.—Mr. SHORT replied: This investigation has been continued, but I am unable to hazard any opinion as to when conclusive results may be expected. The hon. Member will appreciate that investigations into the causation of cancer in connexion with particular occupations are always very difficult, and that a special difficulty arises in the present investigation owing to the fact that the total number of fatalities from cancer of the bladder among aniline workers is quite small, and the collection of data, therefore, very laborious.

Manufacture of Dangerous Drugs.

Lieut.-Colonel FREMANTLE asked the Home Secretary when the report of the preliminary conference on the limitation of manufacture of dangerous drugs, recently held in this country, would be available to Members of Parliament.—Mr. SHORT replied: The report of this meeting of Government representatives from the manufacturing countries, which was one of the stages in the working out of the League scheme for the limitation of the manufacture of dangerous drugs, has been sent to the League, and, I am informed, is now in course of being printed. I am afraid I cannot say how soon copies will be available.

Mentally Defective Children.

Mr. DAY asked the President of the Board of Education the number of children in England and Wales between the ages of 5 and 16 who were ascertained by the education authorities to be mentally deficient; the number of these who were ascertained to be educable; the number who were ascertained to be ineducable; the number of such children who were attending schools, institutions, and other centres; and were there any statistics that would show the number receiving home training.—Sir CHARLES TREVELYAN replied: According to the latest returns available, 32,775 educable mentally defective children have been ascertained by local education authorities in England and Wales; of these, 28,598 were attending schools or other institutions. I am afraid that I am unable to give figures for ineducable children on a comparable basis, but I am informed that the names of 3274 children were notified to local authorities under the Mental Deficiency Acts during the year 1929, of whom 352 were sent to institutions.

Wrapping of Cheese in Tinfoil.

Sir CHARLES CAYZER asked the Minister of Health whether the warning conveyed in the annual report of the Ministry of Health as to the potential danger of the practice of wrapping cheeses in tinfoil was based on a report of an official analyst of the Ministry; and whether the samples examined were of British or of foreign origin.—Mr. GREENWOOD replied: The report quoted was that of a public analyst appointed by a local authority. The appointment of such an officer is subject to the approval of my department, who require to be satisfied as to the competence of the person appointed. I understand that some of the samples examined were British, and that some were imported.

Sir C. CAYZER: Does not the right hon. gentleman consider that a grave warning of this kind based on such slender evidence is calculated to do a great deal of harm to an important industry?

Mr. GREENWOOD: I do not accept the hon. Member's suggestion that there is slender evidence. A distinguished public analyst has said that in certain cases food was contaminated.

Infant Mortality.

Lieut.-Colonel FREMANTLE asked the Minister of Health the main reason for the increase in infant mortality in England and Wales in the years 1924 and 1929 respectively.—Mr. GREENWOOD replied: I am advised that the increase in 1924 was mainly due to an epidemic of influenza, and in 1929 to a similar epidemic coupled with an epidemic of whooping-cough.

TUESDAY, DEC. 9TH.

Education of Mental Defectives in Scotland.

Mr. TRAIN asked the Secretary of State for Scotland how many educable mental defectives in Scotland were receiving suitable education; what were the size and number of the classes; and what was the total expenditure.—Mr. JOHNSTON (Under-Secretary for Scotland) replied: The number of educable mentally defective children between 5 and 16 years of age receiving instruction in special schools, classes and residential institutions in Scotland is 3938. I am unable to state the precise number of the classes, but the number of children in a class is limited to 20. The statistical information available does not enable me to separate the expenditure on such instruction from the other expenditure of the education authorities.

X Ray Examination and Tuberculosis.

Dr. HASTINGS asked the Minister of Health the proportion of cases treated in dispensaries for the prevention of tuberculosis in which the diagnosis of pulmonary tuberculosis was confirmed by X ray examination.—Mr. GREENWOOD replied: The number of X ray examinations made in 1929 for every 100 new cases and contacts who were examined in tuberculosis dispensaries in England and Wales was slightly over 25. I have no information as to how many of these examinations resulted in the confirmation of a diagnosis.

Dr. HASTINGS asked the Minister of Health to wh extent facilities for the X ray examination of the ch were at the service of medical officers in charge of dispe saries for the prevention of tuberculosis.—Mr. GREENWO replied: Definite arrangements for X ray examination ha been made by 122 out of 140 tuberculosis authorities England and Wales, and by all the metropolitan borou councils. Other tuberculosis authorities have from time time provided X ray examinations for particular cases.

Relief of Sick Poor in Scotland.

Mr. KIRKWOOD asked the Secretary for Scotland whethe in view of the hardship now existing among the unemploy and sick poor in the face of the cold weather and the c of fuel, he would circularise the local authorities, aski them to increase the payments in respect of relief a particularly to make an increase during the Christmas a New Year weeks.—Mr. JOHNSTON replied: My right h friend is advised that any such recommendation as suggested in the question is outside his statutory powe Under the Scottish poor-law an authority is required grant needful assistance for the maintenance of healt But subject to this statutory limitation the Department Health have always agreed to a variation from the approv dietary in poor-houses at Christmas or the New Year.

Small-pox and Vaccination.

Mr. GROVES asked the Minister of Health whether had any reason to believe that the mild form of small-p which had been prevalent in certain districts of this count during the past eight years had shown any greater incide in those counties in which vaccination had been larg neglected as compared with those counties in which t practice had been more largely observed; and, if so, wo he supply statistical data in support of his view.—M GREENWOOD replied: I have no specific evidence that t incidence in any area of the type of small-pox at pres prevalent in this country bears any close relation to t percentage of infants vaccinated in that area. The in dence of the disease is, however, almost entirely limited unvaccinated persons or persons who have not been succe fully vaccinated within recent years.

Post-vaccinal Encephalitis.

Mr. GROVES asked the Minister of Health how ma cases of post-vaccinal encephalitis were brought to t notice of his department during the 12 months Oct. 1 1929, to Sept. 30th, 1930; how many proved fatal; a which of the cases, if any, were vaccinated with Gove ment lymph.—Mr. GREENWOOD replied: Fourteen cases which symptoms suggestive of disease of the central nervo system following within a month of vaccination have be brought to the notice of my Department as having occur during the 12 months ended Sept. 30th, 1930. I am advis that eight of these cases, four of which proved fatal, m be regarded as cases of post-vaccinal encephalitis. Of the eight cases, seven were vaccinated with Government lym and in one case there is no information as to the lym used.

The Schick Test.

Mr. FREEMAN asked the Minister of Health whether had information regarding the towns in which Schi testing and diphtheria immunisation were being practise and whether he could state the number of children in th towns that had been Schick tested and had received o two, or three immunisation inoculations for each ye separately.—Mr. GREENWOOD replied: I have sanction the provision of facilities for Schick testing and immunis tion against diphtheria in 38 districts in England and t in Wales, and I have information that these facilities a also provided in other areas. The information asked i in the second part of the question is not available.

Chemical Warfare Research.

Mr. R. S. YOUNG asked the Secretary for War if he co give the total number of the staff of the chemical warf department, and give the figures for 1920, 1925, and 19 respectively.—Mr. T. SHAW replied: The total number staff on the approved establishment of the chemical warf research department on April 1st of the respective ye is given below: 1920, 410; 1925, 480; 1929, 535; 19 553. The figures for 1920 exclude the staff of the Reseal Establishment, Sutton Oak, as in 1920 that establishm was under the Ministry of Munitions and figures are n available.

Mr. SINKINSON asked the Secretary for War how ma horses had actually been killed by poison-gas experime at Porton each year since the cessation of the great war Mr. T. SHAW replied: None, Sir.

MEDICAL SERVICE PROBLEMS IN AMERICA.

(BY A SPECIAL CORRESPONDENT.)

For some time past in America, more perhaps than in ost countries, public attention has been increasingly ected to the great question of the promotion of the alth of the people. In the press health topics ve considerable "news value"; health talks form opular feature in radio programmes, and there is ce in the statement that is sometimes made that erica has become "health conscious." Prominent ong the problems that are now being most widely cussed is that of securing at a moderate cost an equate provision of medical services to the entire pulation; and in the issue of the *Ohio State Medical urnal* of Sept. 30th there is a thoughtful and minating discussion of this problem by Dr. Willard Rappleye, the Director of Study of the Commission Medical Education, whose report on "Medical ucation in Europe" was reviewed not long ago our columns.[1]

EXPENDITURE ON MEDICAL CARE.

Dr. Rappleye begins by giving a remarkable imate of the direct expenditure on medical care in United States, which he takes to be rather more n 2 per cent. of the annual national income. His ures are as follows:—

	In millions of dollars.		Per family. Dollars.
Patent medicines and drugs	700	.....	25.00
Physicians	650	.....	24.00
Hospitals (civil)	380	.....	15.00
Nursing (all forms)	200	.....	8.00
Dentists	150	.....	6.00
Non-medical practitioners	50	.....	2.00
Total	2130	.....	80.00

The costs are contrasted with other forms of ional expenditure, namely:—

	In millions of dollars.		Per family. Dollars.
Passenger automobiles	4,000	.....	150.00
Tobacco	1,800	.....	67.00
Candy	1,000	.....	37.00
Gasoline (non-commercial)	1,000	.....	37.00
Movies, entertainment	930	.....	35.00
Soft drinks, ice-cream, gum	910	.....	34.00
Jewellery and furs	780	.....	29.00
Radios and musical instruments	440	.....	16.00
Sporting goods, toys, games	430	.....	16.00
Perfumes, cosmetics, toilet soap	410	.....	15.00
Total	11,700	.....	436.00

hese figures would appear to show that the erican people spend far less on doctors than on ly, and twice as much on perfumes, cosmetics, and t soap as on nursing; and they support Dr. pleye's suggestion that the obstacles in the way roviding complete medical services for the popula- lie not so much in economic facts as in the culty of devising a plan of medical provision that ld meet with general acceptance. Given such an, the funds necessary for its operation could be d.

NATIONAL INSURANCE.

ne consideration of the question naturally leads to examination of the various schemes of national rance against sickness that have been adopted in ope; but these do not meet with favour in America. the doctors State sickness insurance is regarded measure of "State medicine," to which the American medical profession is strongly opposed. To the ordinary citizen it savours of "paternalistic" government, and "paternalism" is held to be out of harmony with the American philosophy of life, although to the European observer the institution of prohibition on a national scale seems inconsistent with this view. The present indications certainly seem to suggest that it is not by the adoption of national health insurance based on European methods of compulsory insurance that the solution of the American problems will be attempted.

Moreover, State sickness insurance as we know it in Europe is limited to the wage-earning class and to the small-salaried employees, while the problem to be faced extends over a considerably wider area. Between the insured persons on the one hand, and those members of the community who are fortunate enough to be in a position to pay for all the medical services necessary for complete treatment on the other, there is a large class of potential patients who, while able to pay an ordinary doctor's bill, cannot afford the expenses of a major operation or of a protracted illness. To such persons the economic effects of severe sickness may be devastating; and the cost to them of adequate treatment tends continually to increase with the modern development of specialism and of the increasing recognition of the importance of team work as a condition of the successful attack upon disease. For the great majority of the community sufficient provision against sickness cannot be made by individual effort, and it would seem that some form of spreading the risk by communal action must be found.

VARIOUS EXPEDIENTS.

Various suggestions have been put forward for overcoming the difficulties inherent in the problem as it is now viewed in America, and various expedients are being adopted. There has been a great increase in the provision of hospitals and clinics. Many industries are establishing comprehensive medical services, some on a local insurance basis; and by some students of the problem it is thought that developments on these lines hold out the most likely prospects of successful results. There has been a rapid expansion of the "community chest" movement, this term being used to denote a scheme of voluntary taxation for the purpose, inter alia, of providing medical services. Dr. Rappleye states that over 350 American cities now have "community chests," and that in the year 1929 more than $50,000,000 was raised by them for various forms of social and medical relief. Progress has recently been made, especially in the Middle West, in what is known as "group practice"—i.e., the voluntary combination of a number of doctors, generally from 10 to 20—to offer a more or less complete medical service. Some groups have even provided a hospital for the treatment of their patients.

Dr. Rappleye suggests that in the solution of the problem it is up to the medical profession to take a prominent part, and he indicates various directions in which effort may most usefully be made. One lies in the devotion of increased attention to the preventive side of medical work—the making of preventive medicine an integral part of medical practice. Another is the more economical use of specialist services. He estimates that between 80 and 90 per cent. of medical needs can be met by adequately trained general practitioners; and he contends that the selection of cases for specialist advise should be made by the practitioner and not by the patient, and that the profession should devise means to furnish the public with some guarantee that those who claim

[1] THE LANCET, 1930, i., 1412; and *ii.*, 141.

to be specialists are, in fact, expert in their particular fields of practice. Another element in the solution of the problem is the systematic development of post-graduate study.

Dr. Rappleye concludes by laying stress upon the importance of leadership in the medical profession. "What we need," he says, "is a constructive and sustained programme directed and supported by t best brains of the medical profession, which will a to provide, control, and retain leadership in heal matters, and in the programme of medical servic through proper organisation of the profession, sou schemes of medical and post-graduate education, a wise constructive policy and publicity."

MEDICAL NEWS

University of Cambridge.

On Dec. 5th the following degrees were conferred :—

M.D.—W. H. Craib.

M.B. & B.Chir.—R. W. L. May, A. R. Banham, R. M. Bolam, and Stuart McDonald.

The Raymond Horton-Smith prize for 1929–30 has been awarded to Dr. P. M. D'A. Hart.

University of Bristol.

At recent examinations the following candidates were successful :—

M.D.—T A. Brand.

FINAL EXAMINATION FOR M.B. AND CH.B.

Part I. (including Forensic Medicine and Toxicology).—G. T. Bevir, R. N. O'D. Burns, R. G. C. G. Carlson, A. McD. Davies, G. M. Evans, A. L. Eyre-Brook, F. E. Fletcher, J. D. Hughes, Harold James, John Ridgway, Frances N. Salisbury, O. E. L. Sampson, and J. P. P. Stock.

Part I.—J. R. Gibbs.

Section II (Group I.).—Eveline M. D. M. Collinson and Rowena M. Hickman.

FINAL EXAMINATION FOR L.D.S.—E. R. Carpenter.

University of Liverpool.

The Council have appointed Dr. H. J. Channon to the Johnston Chair of Biochemistry, vacated by the resignation of Prof. Ramsden. Dr. Channon, a former Beit Memorial Fellow, is at present in the department of Experimental Pathology and Cancer Research at the University of Leeds.

Dr. H. E. Annett, late professor of comparative pathology, has been appointed to the Samuel Turner Research Fellowship.—Mr. J. S. Collinge, L.D.S., has been appointed lecturer in Operative Dental Surgery in the place of Mr. H. W. P. Bennette, resigned.

Royal College of Physicians of Edinburgh.

At the annual meeting of the College on Dec. 4th Sir Norman Walker was re-elected President for the ensuing year. Dr. Robert A. Fleming, Dr. Robert Thin, Dr. William Fordyce, Dr. Edwin Bramwell, Dr. Edwin Matthew, and Dr. A. Fergus Hewat were elected members of Council, and Dr. Robert Thin was nominated vice-president. At an extraordinary meeting held at the close of the annual meeting Dr. John Orr and Dr. William Fordyce were elected representatives on the board of management of the Royal Infirmary. The College voted a sum of 1000 guineas to the Royal Infirmary, Edinburgh, in response to its bicentenary appeal.

Hunterian Society of London.

The next award of the Hunterian Society's medal will be made in 1932. The object of the award is to encourage individual effort among general practitioners in advancing the science and art of medicine. The competition is open to all general practitioners resident in Great Britain, Ireland, and the Channel Islands, whether Fellows of the society or not. The medal will be given for the best essay on some subject, chosen by the candidate, from the province of medicine, surgery, and midwifery. Essays must be received on or before Dec. 31st, 1931. The rules governing the award may be obtained on application to the hon. secretaries: Dr. D. C. Norris, 14, City-road, London, E.C.; and Mr. Andrew McAllister, 79, Wimpole-street, W. 1.

Medical Benevolent Fund Guild.

The Father Christmas Branch of the Guild, over which Lady Tweedy presides, is issuing a special appeal to enable the Guild to make Christmas gifts to annuitants and necessitous grantees, thus making a small attempt to cheer the lot of those who have fallen on evil times. A similar effort has been made in past years but the needs are always greater than the money received, and a warning to this effect will be timely. Many doctors, their wives and their children subscribe to the Branch, and give pleasure to a large number by so doing, but more 5*s.* and 3*s.* subscriptions are needed, as well as gifts in kind. We call attention to the Branch in the hope that the distributors may receive promptly some assistance in their labour of kindness. The honorary treasurer is Miss Swinford Edwards, 68, Grosvenor-street, London, W. 1.

King George Hospital, Ilford.

On Thursday last week, Prince George presided at t "foundation dinner" of this hospital at Carpenters' Ha and at the end it was announced that the building fu amounted to £107,000.

Hospital for Sick Children.

Sir James Barrie last week took the chair at a festi dinner at the Guildhall in support of the appeal for t reconstruction of the new Hospital for Sick Children Great Ormond-street. After the dinner donations amounti to £40,568 were announced.

London (Royal Free Hospital) School of Medici for Women: Annual Dinner.

Former students of the school, as usual, showed th confidence in the successful organisation of this ann function by bringing many guests to dine, to listen to sh apt speeches, and then to dance. A party of more than 4 assembled punctually and stayed late, though, or possil because, the formal proceedings were soon complet After the loyal toasts, Mr. St. John Ervine, in proposi the School and Hospital, confessed to two errors, b of which that evening had done much to remove: an infant fear of medical students and an entire misconception the educated woman. His claim that the theatri profession had the honour of being the pioneer of equal between men and women was conceded with applau He sympathised with the practising doctor in his task tinkering up such an inconvenient machine for its purp as the human body, and expressed a flattering convict that any good doctor, assisted by a competent engine would have made a better job of it. Speaking of the l to the school of Dame Mary Scharlieb, Mr. Ervine recal her unusual qualities, which caused her to inspire in t young as much affection for herself as she felt for the

Mr. Malcolm Henderson, the chairman, responding to t toast, announced that the association between the Ro Free Hospital and the London School of Medicine Women had recently been cemented by an agreem extending over the next 50 years. The entry of stude to the school had, in recent times, not only been maintain but had actually increased. During his long connexion wi the school the buildings had had to be extended to dou their size. He felt honoured to have been privileged work with the women to whose courage and wisdom t development had been due.

Mr. L. E. C. Norbury, F.R.C.S., in terms of cord welcome, proposed the guests. These included, besid Mr. Ervine, Lord Moynihan, P.R.C.S., Mrs. Kinnell, t Chairman of the Appeal Committee, Miss Jebb, the Princi of Bedford College, and the Editors of the *British Medi Journal* and *The Lancet*.

Mrs. Kinnell, in reply, said that it was always a pleasure her to be associated with the school and the hospital eith in work or in play; they brought to all their enterpri a stimulating vigour, kindliness, helpfulness, and se helpfulness. Some weeks ago, Mr. Baldwin, when speaki at the Girton College Extension Dinner, had noted t disabilities under which the Women's Colleges did th work in the general life of the University. On the mater side he regretted for them the lack of beautiful collegi buildings, old chapels, and rich endowments; but he regrett also on the immaterial side the lack of the great traditi which it is the privilege of the sons and brothers of the r to inherit and to maintain. Mrs. Kinnell held t there was something better in life than inheriting a gr tradition, and that was creating one.

Lord Moynihan spoke of the special place of women medicine; he welcomed the increasing number of wom taking up laboratory work, for which he deemed th exceptionally well fitted.

The last toast, that of the chairman, was proposed by M Waller, B.Sc. She spoke of the great services rendered the school over a period of 35 years by the firm of solicit to which Mr. Henderson belonged. He had inherited fr his father a keen interest in its progress and had alw been one of its most staunch friends and supporters.

xtension of St. Bartholomew's Hospital, Rochester.

The Rev. J. Bailey, the Prior, recently dedicated the new t-patients' department, which has cost £20,000. The remony marked the completion of the first part of a mprehensive scheme of extension, the cost of which will ceed £100,000. The new buildings include an operating eatre for casualties and minor cases.

n Indian Hospital for London.

The Indian Medical Association (Great Britain) is pro- ɔting a scheme for the establishment of an Indian hospital London, with the support of a number of delegates to the ɔund-Table Conference and Indian medical men in England. is proposed that the hospital should be started with beds. Indian post-graduates would be provided with use appointments, facilities would be given to Indian ctors for research and specialisation, and a centre of ining as nurses to Indian women created. The initial pital cost is estimated at £12,500, and the annual expenses the first few years at about £4500.

Appointments

AMINGS, R. E., L.R.C.P. Lond., M.R.C.S., has been appointed House Surgeon, Nuneaton General Hospital.

OYD, R., L.R.C.P. Lond., M.R.C.S., Certifying Surgeon under the Factory and Workshop Acts for Southminster, Essex.

FKIN, D. M., L.R.C.P. Lond., M.R.C.S., House Surgeon, Birmingham Children's Hospital.

EKIE, M., M.B., Ch.B. Manch., Asst. Medical Officer of Health, Bromley, Kent.

EWART, W. A. McEWAN, L.R.C.P., F.R.C.S. Edin., L.R.F.P.S. Glasg., County Medical Officer for Essex.

stminster Hospital: DAVIES, E. T., L.R.C.P. Lond., M.R.C.S., and STEWART, J. G., L.R.C.P. Lond., M.R.C.S., Resident House Surgeons. GOULDENBACH, L. M. A., L.R.C.P. Lond., M.R.C.S., and BUCK, G. H., L.R.C.P. Lond., M.R.C.S., Resident House Physicians.

Vacancies

For further information refer to the advertisement columns.

rdeen Royal Infirmary.—Hon. Jun. Ophth. Surgeon.
Saints' Hospital for Genito-Urinary Diseases, 91, Finchley-road.—H.S. At rate of £150.
kenhead General Hospital.—Sen. H.S. £150.
dford Royal Infirmary.—Hon. Surg. Also Hon. Asst. Surg.
ghton, Royal Sussex County Hospital.—Cas. H.S. £120.
stol, Hortham Colony for Mental Defectives.—Med. Supt. £700.
stol General Hospital.—H.P.'s, H.S.'s, Res. Obstet. O. Each at rate of £80. Also Cas. H.S. At rate of £100.
rnley, Victoria Hospital.—Two H.S.'s. Each at rate of £150.
ry Infirmary, Lancashire.—Third H.S. At rate of £150.
rlisle, Cumberland, and Westmorland Mental Hospital, Garlands.—Jun. Asst. M.O. £350.
nnaught Hospital, Orford-road, Walthamstow, E.—Sen. Res. H.S. At rate of £150.
ydon General Hospital.—Hon. Physician to Children's Dept.
byshire Royal Infirmary.—Non.-Res. Radiologist. £100.
by County Mental Hospital, Mickleover.—Jun. Asst. M.O. £350.
blin, Mercer's Hospital.—Hon. Asst. Visiting Surgeon. Also Hon. Jun. Anæsthetist.
lley, Guest Hospital.—H.S. £170.
rham County Hospital.—Two Res. H.S.'s. Each £160.
ex County Council.—Asst. County M.O.H. £500–£600.
lina Hospital for Children, Southwark, S.E.—Hon. Dental Surg.
ter, Royal Devon and Exeter Hospital, Pathological Department.—Pathologist. £500.
sgow University.—St. Mungo (Notman) Chair of Pathology.
rogate Infirmary.—Sen. and Jun. H.S.'s. At rate of £150 and £125 respectively.
pital of St. John and St. Elizabeth, 60, Grove End-road, St. John's Wood, N.W.—Gynæc. Surg. Also Radiologist.
pital for Sick Children, Great Ormond-street, W.C.—Part-time Jun. Cas. O. At rate of £150.
ldersfield Royal Infirmary.—H.S. At rate of £150.
l Royal Infirmary, Sutton Branch.—H.P. At rate of £160.
l Royal Infirmary.—2nd H.S., 3rd H.S. And H.S. to Ophth., &c. Depts. Each at rate of £150. Also Cas. H.S. At rate of £130.
rd, King George Hospital.—Hon. Physician.
ian Medical Service.—Commissions.
erness Royal Northern Infirmary.—H.P. At rate of £100.
ls City Sanatorium, Killingbeck.—Med. Supt. £850.
ester Royal Infirmary.—Hon. Physician. Hon. Asst. Physician. Also Res. H.P. At rate of £125.
rpool Sanatorium, Delamere Forest, Frodsham.—Asst. Med. Supt. £250.
nchester. Ancoats Hospital.—H.S. for General Surgery, &c. At rate of £100.
nchester Royal Infirmary.—Asst. Res. Surg. O. At rate of £150.
nchester Royal Infirmary, Central Branch, Roby-street.—H.S. £100.
ropolitan Hospital, Kingsland-road, E.—Asst. M.O. to X Ray Dept.
National Hospital, Queen-square.—Hon. Surg. Asst. Also Hon. Asst. Surg.
Newcastle-upon-Tyne, Hospital for Sick Children.—Jun. H.S. At rate of £100.
Pontefract General Infirmary.—H.S. £150.
Poplar Hospital for Accidents, East India Dock-road, E.—Sen. Res. O., &c. £200 plus £75.
Reading, Royal Berkshire Hospital.—H.P., H.S., and Cas O. All at rate of £150.
Royal Waterloo Hospital for Children and Women.—Res. H.S. At rate of £100.
St. Mark's Hospital for Cancer, Fistula, and other Diseases of the Rectum, City-road, E.C.—H.S. At rate of £75.
St. Peter's Hospital for Stone, &c., Covent Garden, W.C.—Clin. Assts.
Salford Royal Hospital.—Cas. H.S. At rate of £125.
Sheffield Royal Infirmary.—Ophth. H.S. £80–£100, H.P., H.S., Asst. Aural and Ophth. H.S. Also Asst. Cas. O. All at rate of £80.
South London Hospital for Women, South Side, Clapham, S.W.—Three H.S.'s. Each at rate of £100. Also Asst. S. to Ear, Nose, and Throat Dept.
South Shields, Harton Hospital.—X Ray and U.V.R. Operator. £250.
Southampton, Royal South Hants and Southampton Hospital.—Sen. H.S. £225. Also H.P., and Two Asst. H.S.'s. Each at rate of £180.
Southampton, Royal Eye Hospital.—H.S. £150.
Sutton, Surrey, Sutton and Cheam Hospital.—Hon. Acting Surg.
Swansea County Borough.—Asst. M.O. £600.
Swansea General and Eye Hospital.—H.P. £150.
Torquay, Torbay Hospital.—H.P. £175.
Warwick, King Edward VII. Memorial Sanatorium, Hertford Hill.—Sen. Asst. M.O. £275.
Walsall General Hospital.—H.S. At rate of £150.
Watford, Herts, Peace Memorial Hospital.—Res. Surg. O. At rate of £150.
West African Medical Service.—Medical Officers.
Weston-Super-Mare General Hospital.—Res. H.S. At rate of £150.
Wigan Royal Infirmary.—H.S. At rate of £150.

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Hackney (London).

Births, Marriages, and Deaths

BIRTHS.

CORMACK.—At the Dufferin Hospital, Rangoon, on Friday, Nov. 7th, to Dorothy, wife of Lt.-Col. H. S. Cormack, I.M.S.—a son.

HAYCRAFT.—On Dec. 4th, at Cathedral-road, Cardiff, the wife of John Berry Haycraft, *M.C.*, F.R.C.S., of a daughter.

LYDON.—On Dec. 3rd, at Galway House, Shire Green, Sheffield, to Helen Anderson, M.B., Ch.B., wife of F. L. Lydon, M.B., Ch.B.—a son.

MADGWICK.—On Dec. 2nd, to Adèle Hope, M.B., B.S., the wife of John R. A. Madgwick, M.B., B.S.—a son.

WELLS.—On Dec. 5th, at Barrington Hall, Cambridge, the wife of Dr. Arthur Q. Wells, of a daughter.

WHITEHEAD.—On Dec. 1st, at York-mansions, S.W., the wife of Major N. T. Whitehead, R.A.M.C., of a daughter.

WILSON.—On Nov. 22nd, at Carisbrooke, Plymouth, to Vera, wife of Edric F. Wilson, F.R.C.S. Eng.—a daughter.

MARRIAGES.

GRAY—GADSDON.—On Dec. 2nd, at Colchester, George Milne Gray, F.R.C.S., to Philippa Jeanne, daughter of Mr. and Mrs. H. P. Gadsdon, of Clacton.

LOVE—LAMBERT.—On Nov. 29th, at St. Mary's, Snettisham, King's Lynn, William Griffith Love, M.B., of Woodville, Burton-on-Trent, to Peggy, eldest daughter of Ernest W. Lambert, of Sutton Lea, Snettisham.

WILLIS—WHITTET.—On Dec. 4th, at Braid Church, Edinburgh, William Elliott Willis, M.B., Ch.B., to Mary Margaret, daughter of the late H. F. Whittet, solicitor, and Mrs. Whittet, Comiston-road, Edinburgh.

DEATHS.

BAILY.—On Dec. 4th, at La Forêt, Cannes, A.M., Edwin Baily, M.B., C.M., M.B.E., late of Oban, Argyll.

BENNETT.—On Dec. 3rd, at Regent-road, Leicester, Frederick William Bennett, M.D., B.Sc., aged 70.

BRIMACOMBE.—On Dec. 5th, at Tunbridge Wells, Richard William Brimacombe, T.D., M.D., late Lieut.-Colonel, R.A.M.C.

FOWLER.—On Dec. 1st, at College-road, Hampstead, N.W., Trevor Hayman Fowler, M.R.C.S., L.R.C.P., late Captain, R.A.M.C.

HAMMOND.—On Dec. 1st, John Balding Abbott Hammond, M.B. Lond., of Cleveland-gardens, W., and formerly of Shanklin, I.O.W., aged 54.

HERDMAN.—On Dec. 6th, very suddenly, Ronald Tydd Herdman, M.D.

KILNER.—On Dec. 1st, at the Old Mill House, Bury St. Edmunds, Charles Scott Kilner, M.B.E., M.B., B.Ch., D.P.H., J.P.

PRITCHARD.—On Nov. 27th, suddenly, at Heathfield, Dewsbury, Joseph James Gawler Pritchard, M.R.C.S., L.R.C.P., aged 66 years.

SECCOMBE.—On Dec. 4th, at Chester-place, Regent's Park, N.W., Philip John Ambrose Seccombe, M.B., aged 61.

TODD.—On Monday, Dec. 1st, 1930, William Alexander Todd, M.B., Ch.B., Medical Superintendent of Killingbeck Sanatorium.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices o Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

A HISTORY OF MEDICINE IN MASSACHUSETTS.

IT is no easy task to compress 300 years of medical history into less than 200 pages, and to make a readable book. Dr. Viets deserves congratulation, for his book [1] is really interesting and should make a wide appeal. A brief introduction shows that the chief element in medicine to be transferred to America, in 1620, was the widespread belief in Galenic principles, tinged with the then heterodox views of Paracelsus, Vesalius, and the giants of the Renaissance. Two men with medical knowledge, Deacon Dr. Samuel Fuller and Giles Heale, a barber-surgeon, were passengers on the *Mayflower*. Heale returned in that ship in 1621. Fuller stayed in New England, and died of small-pox in 1638. His third wife practised as a midwife. The early history of medicine in America is largely bound up with theology. Governor Winthrop found time to practise physic in addition to his other activities; especially interesting is the transcript of the letter written by him in 1652, dealing with a case of paralysis in a child. Thomas Thacher printed, in 1677, a broadsheet, epitomising Sydenham's views on the small-pox. John Clark, the first regular medical man in New England, arrived in 1638, and was the progenitor of a long line of physicians, seven in number and all named John, the last of whom died in 1805.

It is interesting to note that attempts at prevention were quickly to the fore, a strict quarantine being established at Boston by 1648 over all vessels arriving at the port. Conditions of life in this early colonial period were very hard, as were also conditions of practice if we may judge from the story of a barber-surgeon, named Dinely, who, while journeying to Roxbury to pull a tooth, was lost in a snow-drift. It was some days before his body was found and his widow, in her grief, fell into premature labour, and on the baby being born, insisted on saddling it with the name of Fathergone Dinely.

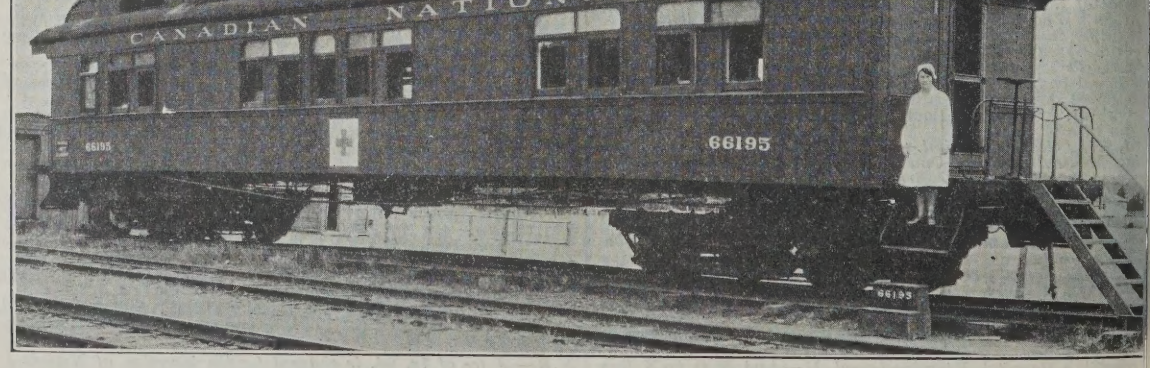
The chapter on the colonial period is followed by one on the first 75 years of the eighteenth century, culminating with the war of Independence. Boylston's inoculations in and after 1721 are the most interesting part of his chapter, and it contains goo accounts of Douglass and Dr. James Lloyd. T war of Independence coincided with the rise of t Warrens and the part played in the revolution the medical fraternity of Boston is described. Th we have accounts of the foundation of t Massachusetts General Hospital and Medical Socie and the rise of Harvard. Biographies of Oliv Wendell Holmes, Jackson, Bigelow, and other pionee lead up to an excellent chapter on Morton and t first administration of ether for a major surgic operation, an illustration of which forms the front piece. Other pioneer American anæsthetists, su as Wells and Long, are here rescued from oblivio and we are glad to see that although the name of t first patient is not included in the frontispiece, finds a place in the text; it was Gilbert Abbott, name surely worthy of remembrance. A bri sketch of modern developments concludes a we written and fascinating book.

[1] A Brief History of Medicine in Massachusetts. By Henry R. Viets, M.D. With illustrations. Boston and New York: Houghton Mifflin Company. 1930. Pp. 194. $4.

TRAVELLING HOSPITALS IN CANADA.

THE provision of adequate medical attenti in the more remote districts of Canada has been pressing problem ever since pioneer days. There w a time before the coming of the railway when t farmer and his wife on the frontier of the west had rely on their own native ingenuity and comm sense in the treatment of household ills. Abo three-quarters of the population of Saskatchew is still rural, and not a small proportion lives in ou lying districts to which the problem of bringi health services is difficult. Recently the provinci Government made provision whereby communiti could obtain the services of doctors under a coöperati plan. One scheme empowers a rural municipali to make a grant to a medical practitioner as inducement to him to take up his residence a practise his profession in the community, a gra of money up to $1500 being made to him for th purpose. The other plan is that which makes possible for rural municipalities, by vote of t residents of the area, to engage a full-time practition at a salary not exceeding $5000 yearly. In th case the doctor acts as the community doctor, givi free medical service to all ratepayers and their familie Thirteen Saskatchewan municipalities are trying o the first scheme and 19 districts the second schem

FIG. 1.



The Red Cross car of the Canadian National Railways stationed at Fort Frances, Ontario.

he ratepayers in the atter case paying a tax of something like $3.85 per quarter section of 160 acres. In one or other of these ways there are now few communities which have no doctor within reasonable reach in ase of emergency.

Many districts, however, till lack adequate facilties for the treatment of more difficult cases and or the isolation of patients uffering from contagion, r for the spreading mongst the population enerally of elementary nstruction in first-aid. t is to fulfil this function hat the Canadian ational Railways are lacing in service on their nes three new hospital nd first-aid cars. It is he intention of the anagement that these rs shall be used where spital accommodation limited and where a nowledge of first-aid is ecially desirable. They ill also be used in disters, such as train wrecks nd mine explosions, where speed in the provision of edical assistance is essential. The cars will be in harge of an experienced medical practitioner and will e hauled from place to place as occasion demands. In ral communities lectures will be conducted in the dy of the car, illustrated by means of charts and oving pictures, on the subject of first-aid and mentary medical science.

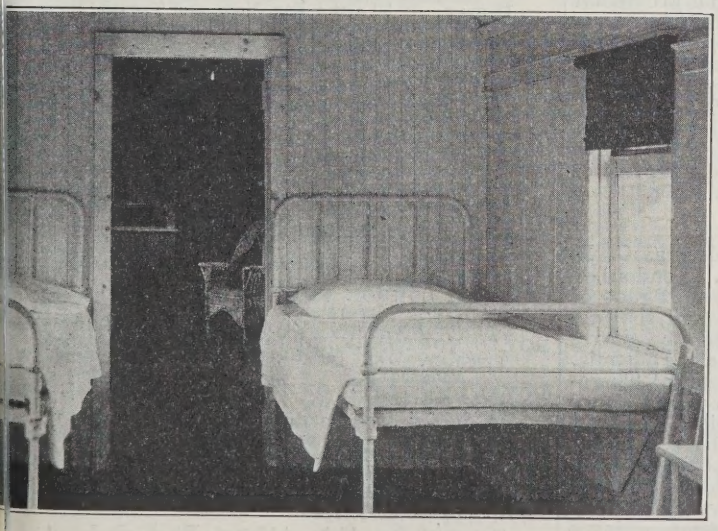
The cars themselves (Fig. 1) are virtually travelling spitals. They are 71 feet long and divided into sections, including a locker room, a lecture room, d operating theatre, bathroom, kitchen, and sleepg quarters for the official in charge. The equipment cludes a steel operating table, instrument cabinet, dicine chest, and racks with all kinds of splints. e lecture room (Fig. 2) has a blackboard and various rts and, when required, may be transformed into a convalescent or isolation ward (Fig. 3). The living accommodation for the attendant is equipped with lockers and a small kitchenette. The bathroom in block tile has a shower. Plentiful provision of hot water is ensured by a 200-gallon tank placed on top of the car, connected with a heater. Three independent systems are used for lighting. The electric lamps may be lit by current supplied either from the car batteries or from an outside source while the car is standing in a siding; should both these fail, oil lamps present a third alternative.

The first car is already in service and the others will be completed shortly.

FIG. 2.

The first-aid instruction car.

FIG. 3.



Interior of the hospital car.

THE RELATION OF REASON TO LIFE.

WITH his accustomed literary skill and dialectic invective, Dr. Schiller has again attacked the problem of the relation of reason to life as an activity.[1] Those who are familiar with his writings on logic in relation to humanism, belief, and formal logic, will find this study familiar, and, unfortunately, without any substantial new matter. The author's thesis is that formal logic strips actuality of its vital links and robs it of its very meaning as a fabric of relations that exist in and for activity. He tries to liberate logic from its thraldom to words and formulæ, and therefore attacks, in the main, absolutism. The most important chapters for any person interested in scientific method are those on Meaning and Formal Theories of Judgment. The author seems, however, to have ignored the advances in the subject of Meaning made by Ogden and Richards. Vaininger is mentioned only once. The book may cause irritation because of its omissions, but is certainly entertaining.

[1] Logic for Use. By F. C. S. Schiller, Fellow of Corpus Christi College, Oxford, and Fellow of the British Academy. London: G. Bell and Sons Ltd. 1929. Pp. 455. 16s.

CONGRESS OF RADIOLOGY.

EXHIBITION AND DINNER.

THE annual congress and exhibition of the British Institute of Radiology (incorporated with the Röntgen Society), held at the Central Hall, Westminster, from Dec. 3rd to 5th, was attended by radiologists from all over the country, with a sprinkling of visitors from the continent. The congress centred round an exhibition of X ray and other apparatus, even a casual inspection of which was enough to show that English manufacturers are well up to date and that their apparatus compares favourably with that of foreign manufacture. There were no striking novelties. Contrary to American practice, which so far has adhered strictly to mechanical rectification, valve rectification here holds the field with the exception of one exhibit. Where all apparatus is so good it is invidious to single out any for special mention; the needs of the radiologist are still varied, and apparatus that meets the need of one will not necessarily be ideal for another. The protective measures in all are of high standard, fully up to that laid down by the Protection Committee, and the exhibition is one that does great credit to the British manufacturers.

The papers presented at the congress were few in number but of exceptional interest. In the technical section was described the new tube that has two focal spots, one for ordinary radiography, the other of large area for use with heavy current in order to obtain rapid clear exposures at long distances. In the medical session Dr. H. A. Harris related his conception of the growth of bone and of arrest due to illness, and Dr. Donald Hunter gave an account of his work on the influence of thyroid and parathyroid on bone, particularly osteitis fibrosa. The Mackenzie Davidson Memorial Lecture was delivered by Prof. G. P. Thomson, F.R.S., on Some Recent Experiments on Cathode Rays; the Silvanus Thompson Memorial Lecture by Dr. A. E. Barclay on the Danger of Specialisation is printed substantially at the front of this issue. It is a good practice for a physicist to give the memorial lecture to radiologists, and vice versa.

The annual dinner held on Dec. 5th at the Trocadero Restaurant was attended by about 140 guests. The President of the Congress, Major C. E. S. Phillips, occupied the chair and Mr. Cuthbert Andrews, in proposing "The Institute," remarked that it was as natural to couple the President's name with the Institute as to link Adam & Eve, David & Jonathan, Burke & Hare, and in more modern times Elephant & Castle. He made a strong appeal for the linking to the Institute of the several independent radiographic societies which were being formed in various provincial centres, and suggested that this could be done primarily by making the *British Journal of Radiology* the official organ for all radiological societies, and so ensuring a comprehensive and accessible record of British radiology. The toast of "The Guests" was proposed by Prof. Woodburn Morison and was responded to by Sir Cuthbert Wallace, Mr. C. C. Paterson, and Dr. Watts Eden. In the intervals of the dinner the Westminster Glee Singers sang.

NEW PREPARATIONS.

(1) EXHEPA, (2) GASTROSIC LEO (Messrs. C. L. Bencard, Ltd., 184, Wardour-street, London).—(1) Exhepa, as its name indicates, is an extract of liver; the glands are selected and fresh and the preparation claims to contain unimpaired the active substances found to be beneficial in pernicious anæmia. It is manufactured by the Danish Chemical Therapeutic Society in Copenhagen, in accordance with a method evolved in collaboration with the Danish Government Serum Institute, by whom the freshness of the glands and the special methods of extraction and desiccation are guaranteed. Exhepa is put up in glass vials, hermetically sealed, and packed in boxes of ten vials, each vial representing a dose equivalent to 4 oz. of fresh liver. For patients who find the characteristic smell and taste of liver disagreeable, the preparation is supplied in a more palatable form, with no alteration of therapeutic value or of price.

(2) From the same firm we have received samples of Gastrosic Leo manufactured from the freshly killed hog stomach. This preparation is also under the control of the Danish Government, and is recommended to the medical profession on the experience derived from tests in certain Danish hospitals as an auxiliary treatment along with liver extract.

NURSERY BISCUITS.

WE have received an assortment of Robb's nursery biscuits which are well known in homes and institutions as useful food for the aged, invalids, and infants from the age of 6 or 7 months. The venerable duration of their popularity makes it unnecessary to say more of these biscuits than that they continue to deserve it.

Medical Diary

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
TUESDAY, Dec. 16th.—5.30 P.M., GENERAL MEETING OF FELLOWS. Ballot for election to the Fellowship.
THURSDAY.—5 P.M., DERMATOLOGY. (Cases at 4 P.M. Cases: Dr. H. W. Barber, 1 and 2: Congenital Ichthyosiform Erythrodermia. 3. Psoriasis Associated with Rheumatoid Arthritis. Other cases will also be shown.
FRIDAY.—8.30 P.M., ELECTRO-THERAPEUTICS AND COMPARATIVE MEDICINE. Discussion: A Comparison of Radiological Problems in Man and Animals. Openers: Major A. A. Pryer, Dr. R. W. A. Salmond, Lieut.-Colonel E. Middleton Perry, and Dr. J. B. King, followed by Prof. J. McCunn, Dr. A. E. Barclay, Dr. J. P. Brailsford, Dr. A. Eidinow, and others.

HUNTERIAN SOCIETY.
MONDAY, Dec. 15th.—7.30 P.M. (at Simpson's Restaurant, 2 and 3, Bird-in-Hand-court, 77, Poultry, Cheapside). Dinner. 8.30 P.M., Dr. Remington Hobbs and Mr. M. Oldershaw open a discussion on Puerperal Infection.

CHELSEA CLINICAL SOCIETY.
TUESDAY, Dec. 16th.—7.30 P.M., Dinner Meeting at the Rembrandt Rooms, Thurloe-place, S.W. Sir Thomas Horder will open a discussion on the Treatment of Fibrositis.

SOCIETY OF MEDICAL OFFICERS OF HEALTH, 1, Upper Montague-street, W.C.
FRIDAY, Dec. 19th.—5 P.M., Mr. D. S. Rabagliati, F.R.C.V.S. and Sir W. Dalrymple-Champneys: Undulant Fever.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, Dec. 15th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose and Throat Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M. Medical, Surgical, Throat, and Ear Clinics. Operations.
FRIDAY.—10.30 A.M.: Ear, Nose, and Throat Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Children's Disease Clinics. Operations.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.
THURSDAY, Dec. 18th.—9 P.M., Dr. J. A. Drake: Some Common Skin Diseases Illustrated by Epidiascope and Lantern.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, Dec. 16th.—5 P.M., Dr. S. E. Dore: Erythematous squamous Eruptions.
THURSDAY.—5 P.M., Dr. I. Muende: Pathology Demonstration.

CITY OF LONDON MATERNITY HOSPITAL, City-road, E.C.
THURSDAY, Dec. 18th.—5 P.M., Dr. H. Burt-White: Importance and Treatment of Hæmorrhage in Pregnancy.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.
FRIDAY, Dec. 19th.—4 P.M., Mr. W. A. Mill: Hoarseness.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.
TUESDAY, Dec. 16th.—3.15 P.M., Dr. Rubens Wade: Anæsthesia.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
WEDNESDAY, Dec. 17th.—4 P.M., Prof. Edgar L. Collis: Prevention of Industrial Diseases.

ST. JOHN'S HOSPITAL, Morden-hill, Lewisham.
MONDAY, Dec. 15th.—4.30 P.M., Dr. John Gibbons: Cardiac Cases in Infancy and Childhood.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
TUESDAY, Dec. 16th.—4.15 P.M., Dr. E. B. Leech: Pericarditis and Adherent Pericardium.

ADDRESSES AND ORIGINAL ARTICLES

THE NEURO-MUSCULAR OBSTRUCTIONS OF THE GASTRO-INTESTINAL TRACT.*

BY A. JAMES WALTON, M.S., B.SC. LOND., F.R.C.S. ENG.,
SURGEON TO THE LONDON HOSPITAL.

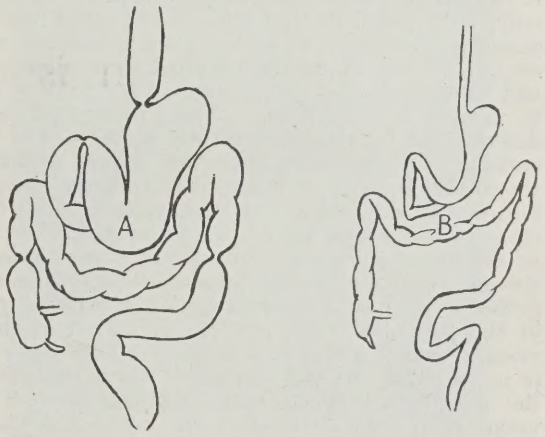
Mr. H. G. Wells, in one of his epic stories, makes his hero say: "This here progress it keeps on . . . you'd hardly think it *could* keep on." In no branch of knowledge is this more true than in that of medicine. In recent years progress has been so great that it is impossible for any one man to obtain a complete mastery of the whole subject, and, indeed, great difficulty is being experienced in arranging the curriculum so that the student can obtain a wide survey of the whole of medicine in the short time at his disposal. I believe, however, that we are even now on the brink of the discovery of a few basic facts which will tend to simplify medicine as a whole.

Already there is a tendency for certain diseases which have been regarded as distinct from one another to be grouped together as different manifestations of similar lesions. One of the most elusive and interesting of such groups is that concerned with the neuro-muscular mechanism of the gastro-intestinal tract. More and more conditions are being recognised as due to an abnormal action of this mechanism, so that they now form a large proportion of all abdominal lesions.

The forward passage of the intestinal contents is dependent in the normal state upon the presence of painless peristaltic waves, each of which consists of a ring of contraction preceded by a zone of relaxation; the whole passing down the wall of the gut. Although in many areas combined with other movements, these peristaltic waves are present from the commencement of the œsophagus to the termination of the pelvic colon, and are controlled by the vagus and sympathetic nerve fibres. In the œsophagus, as Kelly states, experimental work has shown that section of the vagi is followed by dilatation of the œsophagus, while stimulation of the peripheral end causes contraction of the whole tube. In the stomach the experimental results are less uniform, but Watanabe and McCrea show that the balance of evidence supports the view that stimulation of the vagus increases the excitability of the stomach and decreases the emptying time. Similar results are given by division of the sympathetic fibres, while their stimulation has the opposite effect. Hughson, on the other hand, showed that section of the vagus decreases the emptying time. In experiments on the intestines, Koehler finds that the vagal impulses excite peristalsis, and the sympathetic impulses diminish it. As Eppinger and Hiss have shown, two conditions may therefore be recognised: the vagotonic, which is shown by hypermotility and hypertonicity; and the sympatheticotonic, shown by atony and hypotonus.

In the case of the fixed sphincters the evidence is less clear. It would be expected that with increased peristalsis there would be relaxation of the sphincters, whether at the cardia, the pylorus, the ileo-cæcal valve, or the pelvi-rectal junction. Spasm of these sphincters would also be expected with inadequate action of the vagus or overaction of the sympathetic In a similar way, the failure of a peristaltic wave to pass on—that is, an area of spasm of the intestinal tube—would be expected with sympathetic overaction or vagus inhibition. Clinical evidence strongly supports this view, but the experimental findings are less definite. Thus, although Kelly states that section of the vagus is followed by failure of relaxation of the cardia and stimulation of the peripheral end by dilatation of this sphincter, Hughson found that after division of the vagal supply to the stomach it was impossible to produce reflex pylorospasm,

FIG. 1.



Diagrammatic representation of the gastro-intestinal tract: (A) with section of vagus or stimulation of sympathetic; (B) with stimulation of vagus or section of sympathetic.

and McCrea found that resection of the pyloric vagal branches produced a semipatulous condition of the pyloric sphincter. In spite of these somewhat divergent findings, the consensus of opinion to-day is that the vagal impulses are augmentor, and the sympathetic are inhibitory. (Fig. 1.)

The acceptance of these views will make it evident that there are three changes which may give rise to obstruction in some portion of the intestinal tract. These three are: (1) paralysis of both systems, or, as Koehler suggests, a balance at a lower level than normal; (2) relative paralysis of the vagus, or overaction of the sympathetic, for all impulses; (3) relative paralysis of the vagus, for those impulses which pass only to the sphincters.

Paralysis of Both Systems.

ACUTE DILATATION OF THE STOMACH AND ILEUS PARALYTICUS.

Ætiology and Pathology.—Both conditions may occur at any age or in either sex, but in my experience there is unquestionably a personal idiosyncrasy, so that certain patients have a tendency to develop paralytic dilatation of the stomach or intestines under a slighter provocation than that usually required. If there be any evidence of this congenital fault, an operation, and especially an abdominal operation, should only be undertaken after very careful preparation. There have occurred in my own practice several cases who have developed this serious complication after two separate operations.

* The Purvis Oration, delivered before the West Kent Medico-Chirurgical Society on Dec. 12th.

Rarely the symptoms may arise after over-distension of the viscera and as a sequel of acute disease. More commonly it is found as a result of operative treatment—the three most potent predisposing factors appearing to be the administration of an anæsthetic, rough handling of the stomach or intestines, and the presence of sepsis. Nevertheless, a number of cases had been reported where acute paralytic dilatation has followed operations other than those upon the intestines, and even where no anæsthetic has been administered.

The pathological changes are similar in both conditions. The stomach is greatly dilated, so that it fills nearly the whole of the abdomen. It is V-shaped, with an immensely dilated descending limb on the left, and a somewhat similar ascending limb on the right; the two limbs being separated by a sharp kink on the lesser curve. The wall of the stomach is so thin that it appears to be formed of one layer only, and is sufficiently transparent for the fluid or gaseous contents to be visible when the abdomen is opened. When the stomach is lifted up the dilatation and thinning is seen to pass beyond the pylorus and to involve the duodenum. Many cases have been described as terminating abruptly at the site of the crossing of the superior mesenteric vessels, and thus the condition has been regarded as an acute obstruction due to the pressure of these vessels. It is true that in a few cases a line of necrosis has been observed at the site of the vessels, but in my own experience this is rare, the dilatation gradually decreasing and fading away near the flexure or in the upper part of the jejunum. It is possible that even in those cases in which a line of necrosis has been observed it is secondary to the dilatation which compresses the gut against the vessels. Examination of the viscus from within will show the same evidence of dilatation with flattening of the normal mucosal folds, and general thinning. Areas of superficial ulceration and erosions are constant, and it is the loss of blood in small quantities from these areas that gives the brown or black colour to the vomit.

The pathological changes in the intestine in paralytic ileus are almost identical. There is the same enormous dilatation and thinning, with no evidence of any hypertrophy of the gut wall, the same absence of any mechanical obstruction, and yet the same failure of the intestinal contents to pass. An interesting light is thrown upon the ætiology by those cases in which the septic factor is most in evidence. Similar changes of the whole gut are to some degree common with all forms of septic peritonitis, but in some, as in the "ileus duplex" described by Sampson Handley, one or two loops of gut are alone affected. In either, the condition, as in the case of the stomach, gradually fades away below.

The profound dilatation, the complete absence of peristalsis and of any organic obstruction, the relative frequency with septic conditions, and often the failure to obtain relief by drainage, make it evident that both ileus paralyticus and the more local condition of ileus duplex are due to a paralysis of the gut. In spite of the many theories put forward to account for acute dilatation of the stomach, this condition, as first suggested by Campbell Thompson, seems undoubtedly to be of the same nature, for in certain cases, as in those reported by Richardson and Lee, it arises with almost startling suddenness during the course of an operation. In nearly all cases there is no evidence of any obstruction, either mechanical or spasmodic, and its onset or progress is entirely uninfluenced by the performance of gastro-enterostomy.

The seat of the lesion appears to be in the nerv paths and not in the muscle coats, for adrenalin give by mouth seems to act directly upon the gastri muscle and to cause it to contract, while hypoderm injections of eserine salicylate have long been know to have a beneficial effect upon the intestinal musc in cases of ileus paralyticus. Koehler believes tha the condition is not one of complete paralysis, but rather a balance of the two nerve systems at a lowe level than normal, and he states that if the cœlia plexus be injected with nicotine, whereby the sympa thetic impulses are removed, there is the immediat onset of peristaltic movements. Similar effects hav been claimed to follow the administration of a spina anæsthetic. Mauclaire and others have produce evidence of the value of this method, but as it wa in many cases unfortunately given to patients sufferin with mechanical obstruction it has been discredited

Symptoms.—In either case the symptoms are du to a rapid distension of the viscus with gas and fluid and to an increasing collapse from toxic absorption When the stomach is mainly affected, vomiting—a first regarded as simple post-anæsthetic—become increasingly severe until it consists of an almos effortless emission of foul, brown fluid, which is a overflow rather than an actual vomit, for the patien continues to complain of discomfort and distensio in the epigastrium, and the stomach can be see enormously dilated even in the presence of almos constant vomiting. No peristaltic waves are seen When the condition is mainly in the small intestin the vomiting is at first less, and the abdomen evenl distends. Neither flatus nor fæces is passed, an later vomiting of a foul brown fluid, similar to tha seen with an acute mechanical obstruction, occurs In either case there is a rapid collapse.

Treatment.—Since the condition is paralytic i nature, any form of treatment will have to aim a restoring the power of contraction to the paralysed muscle. It is as important, as with any other exhausted portion of the neuro-muscular system, to provid adequate rest, and it is essential to realise tha absolute rest to the stomach and intestine wil generally prevent the onset of the condition. A few years ago the medical profession was obsessed with the idea that the one thing necessary after an operation was to obtain an action of the bowels, but with a wider appreciation of the fact that no aperient whatever should be given, either by mouth or hypodermically, for two or three days after an operation, and that morphia should be freely allowed, these conditions are becoming rarer. The value of such a line of treatment is clearly shown in cases of early acute obstruction from carcinoma of the colon. A patient is brought in with obstruction who is already vomiting and becoming distended. Colostomy is performed, but the gut is not opened. If morphia is then given it will frequently be found that all the acute symptoms entirely disappear, and the opening of the colostomy, instead of having to be performed within a few hours, can often be delayed for several days.

In the early stages it may still be possible to bring about a cure by directly stimulating the muscle which is only slightly exhausted. I am a great believer in the administration of suprarenal extract for slight dilatations of the stomach. I originally gave this where there was a post-operative gastric hæmorrhage, but in some mild degrees of dilatation it was difficult to determine whether the dark-coloured vomit was due to a small hæmorrhage or to the early onset of dilatation. Suprarenal extract was given in the belief that the primary change was a hæmorrhage, and it was found that the stomach contracted well and

vomiting ceased. It is my custom to give 1 drachm of the commercial extract of 1/1000 with 1 drachm of water every hour for six doses. In the case of the intestine, eserine sulph., administered hypodermically in doses of gr. 1/200, may have a similar effect upon the muscle. The muscle cannot be rested while it is stretched, and, therefore, if dilatation is actually present the viscus must be emptied. With the stomach, frequent washes are essential. If the patient is turned over on his face with the thorax well supported on pillows natural emptying may be aided. With the intestine, an enterostomy may be required, but this is not so satisfactory, for it is almost impossible to empty the whole length of the gut, and even if a large portion be threaded over a glass tube it will probably refill. If only one loop be affected the gut should be drained from above. In "ileus duplex" Sampson Handley accomplishes this by means of an ileo-cæcostomy combined with cæcostomy. Any other form of operative treatment, such as a lateral anastomosis, is almost certain to fail, since the wall of the gut is completely paralysed.

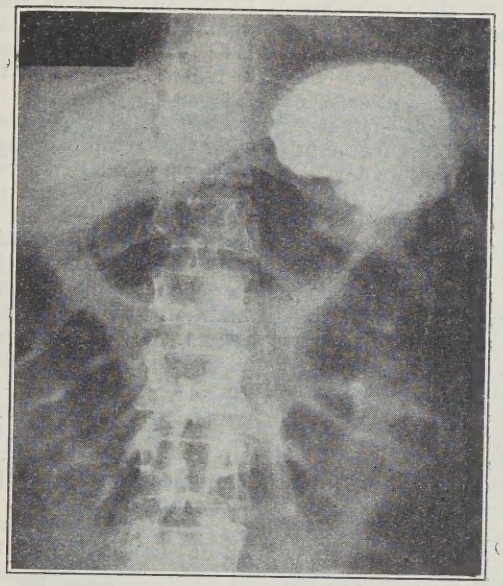
Relative Paralysis of All Vagal Impulses.

There is a very common but heterogeneous group of conditions in which abnormalities of the neuromuscular system are not yet proved to be present, although there is considerable suggestive evidence of such a change which would fully explain the clinical symptoms. These conditions are all characterised by delay in emptying, by dilatation, and by the absence of any visible obstruction or of hypertrophy of the wall behind the suggested obstruction. In many cases there are definite areas of spasm. In fact the changes are precisely those that would be expected to follow diminished action of the vagus or overaction of the sympathetic.

Ætiology and Pathology.—The majority of these patients show the general characters of visceroptosis, and are for the most part females. In them the alterations in the gut movements form only a part of a series of abnormalities which may be classified as: (*a*) changes in body structure; (*b*) alterations in mentality; and (*c*) visceral changes. The latter consist of the presence of dilatation and atony with ptosis, and the presence of accessory membranes and bands.

The stomach, as a rule, is lower than normal, though all ptotic stomachs may not give symptoms. It is usually atonic and is often dilated, and there is nearly always considerable delay in the emptying, as shown by X ray examination. Although the diminution in the rate of passage of the contents is very constant, areas of spasm are frequently found. As a general rule these are shown by a notch or depression in the greater curvature, which used frequently to be mistaken for an hour-glass stomach. They are, however, more limited, they disappear spontaneously or after the administration of eserine or amyl-nitrite, and no meniscus of a lesser curve greater is to be found. Occasionally the spasm may be much more extensive, so that the whole pyloric and even the tubular part of the cardiac portion of the stomach may be involved, giving rise to an X ray picture closely resembling that of a leather-bottle stomach (Fig. 2). In others the spasm is localised to the pylorus and appears to lead to considerable delay in emptying. This variety has been given the special designation of pylorospasm. It not infrequently occurs as a reflex phenomenon with lesions situated in other portions of the abdomen, such as the appendix or gall-bladder, or is found even more commonly with gastric or duodenal ulcers. It may, however, occur quite apart from such local lesions, and is then regarded by many as an important factor in producing symptoms, especially in those who are the subjects of general ptosis. Even in these cases, where the spasm is limited to the pylorus, the stomach is thin and flabby and does not show the muscular hypertrophy such as is found with organic obstruction. At operation the tendency to spasm is always very marked, so that any portion of the stomach which is picked up during the gastric examination will show areas of contraction which form a ridge about 1 in. long and $\frac{1}{4}$ in. wide, running either transversely or longitudinally across the stomach. Within a few minutes this area of spasm disappears, leaving the normal soft wall. In the past, such areas were frequently mistaken for the base of an ulcer, and a gastro-enterostomy was incorrectly performed. The nature of these changes has perhaps led to more controversy than any other lesion in surgery, but every theory has so far failed to explain in a satisfactory manner the cause of the pain and delayed emptying. Some dilatation and membrane formation is found in every case, and it therefore seems certain that these changes are in some way connected with the presence of pain. The bands and ptosis, and possibly the changes in body structure, are undoubtedly congenital faults, and, as Briggs has shown, are hereditary in nature, but the symptoms will not occur unless there be an added loss of tone. There is never any true organic obstruction, for it is a matter of common knowledge that muscular hypertrophy is invariably absent, and although in all cases there is a delay in the passage of the visceral contents there is never any evidence of a localised mechanical obstruction. Moreover, Hurst has conclusively proved that a dropped and atonic stomach or colon may be found in patients who are free from all symptoms, such a position being present merely as an anatomical variation. The part taken by these various factors in producing symptoms has been admirably and exhaustively reviewed by

FIG. 2.



Widespread gastric spasm resembling a "leather-bottle" stomach. No gastric lesion was found at operation.

Bedingfield, who sums up by saying that "the association of malnutrition, poor muscular tone, and an abnormal mental reactivity is characteristic of this group of cases," and that the association appears to depend upon a congenital, possibly inherited, inability of the individual to adapt herself satisfactorily to the various stresses and strains of life. Whatever be the cause, there can be no doubt that the dilatation of the viscera and the stasis of the contents is dependent upon a neuromuscular functional error.

The symptoms date from very early life; they are almost continuous without the definite periodicity of a chronic ulcer; the pain, although often severe, has no clear relationship to the ingestion of food; it may be localised to the stomach or referred to any portion of the intestinal tract; vomiting is frequent and does not give complete relief; there is no loss of appetite and constipation is very common.

Treatment.—When it was believed that the ptosis was the chief factor in causing the symptoms many operations were devised to fix the stomach in a normal position. They are being generally abandoned now that it is becoming more widely recognised that the low position of the stomach is usually only a variation, and that the symptoms are rarely cured by fixation. In all cases of this nature the treatment should primarily be medical. In addition to the changes in the stomach, the abnormalities in the body structure, and especially the mental changes, will require attention. Belladonna is generally advocated as a means of overcoming the spasm, but it is of interest to note that Ritvo and Weiss were able to demonstrate under X rays that it was immediately relieved by eserine given by mouth or hypodermically; which drug also increased peristalsis and heightened the tonus, thus supporting the view that the changes are due to a relative weakness of the vagal impulses. When the spasm is confined to the pyloric sphincter Deaver and other surgeons have advocated its free division. Acting on the belief that the vagal impulses are weakened, operations have been devised whereby the inhibitory sympathetic impulses have been removed by dividing the nerves in the lesser omentum or in the stomach wall itself. Gomain, in 1914, and Jianu, following Gomain's technique, successfully excised the semilunar ganglion and the splanchnic nerves for the gastric crises of tabes. Pribram, regarding these cases of spasm as of a somewhat similar nature, states that he was able to cure by excision of the cœliac ganglion a patient who had had eight previous operations for gastric pain.

DUODENAL ILEUS.

A mild degree of dilatation and apparent atony of the duodenum is common in all the visceroptotic cases, and even when the duodenal condition dominates the clinical picture Wilkie has shown that it is most commonly found in adult females who are the subject of ptosis. The condition was known to Rokitansky in 1842, and cases were reported by Fagge in 1872, but it has only been widely recognised since the later work of Wilkie. Here, as with the other varieties of neuromuscular change, the symptoms, as Barling has shown, often date back to childhood, suggesting a congenital origin. At first associated only with discomfort and flatulence, it later gives rise to severe epigastric pain which is most marked from one to two hours after food. With it there is loss of appetite and often headache, and there are frequent exacerbations of more severe vomiting. On examination the general characters of virginal ptosis are nearly always in evidence, and splashing can be elicited over the dilated stomach, but rarely, if ever, is there any visible peristalsis. The change appears to be a chronic variety of acute dilatation of the stomach and, like that condition, has been thought to be due to obstruction from traction of the mesenteric vessels. Wilkie has found that in some cases the duodenal wall is hypertrophied, and that there is coexistent ulceration of the duodenum in some 20 per cent. of the cases. In one of my own eight cases there was a line of superficial ulceration at the position of the mesenteric vessels, but in the majority there was no hypertrophy whatever of the muscular wall, and the dilatation faded away and showed no sharp termination or other evidence of mechanical obstruction; thus, although a few cases would appear to be mechanical in origin, I think there can be no doubt that the majority are atonic in character, and are due to a neuromuscular fault. In support of this, my own experience has been that only a few are relieved by duodenojejunostomy.

ENTEROSPASM.

Spasm of portions of the small intestine is probably one of the factors in causing pain in the visceroptotic patients, and in them there is often dilatation of the loop of gut proximal to an ileal kink. There are also well-recognised cases where symptoms of acute intestinal obstruction have necessitated an operation but when the abdomen is opened a dilated and apparently obstructed loop is found to terminate below in an area of tight spasm with no organic obstruction. The nature of the pain found in many cases of calcareous mesenteric glands is also suggestive of the presence of localised intestinal spasm. In none of these cases of neuro-muscular obstruction which are all relatively rare, is there any hypertrophy of the wall of the gut proximal to the spasm. The condition can usually be relieved by dietetic and medical measures.

COLONIC SPASM.

The pathological changes found in the colon in cases of visceroptosis and the symptoms they cause are in every way comparable with those of the stomach and small intestine, although in the colon accessory membranes and bands are generally more in evidence. The symptoms are most frequently allocated to the site of the atonic and dropped cæcum—the right-sided ptosis of Coffey. In such cases there is marked delay in the passage of the contents of the colon but never is there any evidence of mechanical obstruction or of hypertrophy of the dilated gut. Although in these cases areas of spasm may occur and may be seen during X ray examination, there are others usually seen somewhat later in life in which spasm of the descending and pelvic colons is the outstanding feature. It is more persistent than in the last group and tends to be more localised, while often giving rise to severe pain. Owing to the later age of the patient it is therefore very prone to be mistaken for carcinoma of the colon. Ryle has reported a series of 50 such cases. He lays stress upon the fact that although the average age was 39, 66 per cent. of the cases were females—but were usually thin, spare, nervous, anxious, and neurotic—thus showing the relation of this type to the variety with congenital visceroptosis. In my own series, however, examples also occurred in patients, generally females, who were more elderly, who showed none of the stigmata of virginal ptosis and presented only a short pain history, so that the diagnosis of carcinoma was even more closely resembled.

In this variety also the affected portion of the intestine shows no evidence of mechanical obstruction

and no hypertrophy of the gut behind the areas of spasm. In some cases there is an associated colitis to which the spasm is possibly secondary. Ryle found 11 of his 50 cases had such mucous colitis. In other cases it may occur with lesions elsewhere in the abdomen, and thus is possibly reflex. In one of my own cases there was a carcinoma of the stomach, but in others no cause can be found. The chief complaint is pain, which may sometimes only consist of a dull aching, but more frequently occurs as attacks of severe colic, very suggestive of an incomplete obstruction. This may have been sufficiently severe to have necessitated the administration of morphia. During these attacks the contracted portion of the intestine may be palpable as a tender lump which is easily mistaken for carcinoma. An X ray investigation after an opaque enema will reveal a filling defect, a segment of the colon being emptied and failing to fill throughout the whole examination. If the defect is sharply limited above and below, a spasm is suggested, but in others the outline appears to be more irregular and the similarity to carcinoma is thereby increased (Fig. 3). The condition will, as a rule, yield readily to medical treatment, but owing to the uncertainty in the diagnosis and the possibility of the presence of carcinoma, an operation may be required.

Probably at a later stage of the same condition may be seen cases in which the pelvic colon becomes considerably dilated and atonic, although attacks of spasm may still occur, and the patient suffers with an increasing degree of constipation. These changes may progress until the condition resembles clinically one of Hirschsprung's disease, and may require treatment upon somewhat similar lines.

Relative Paralysis of the Vagal Impulses to the Sphincters.

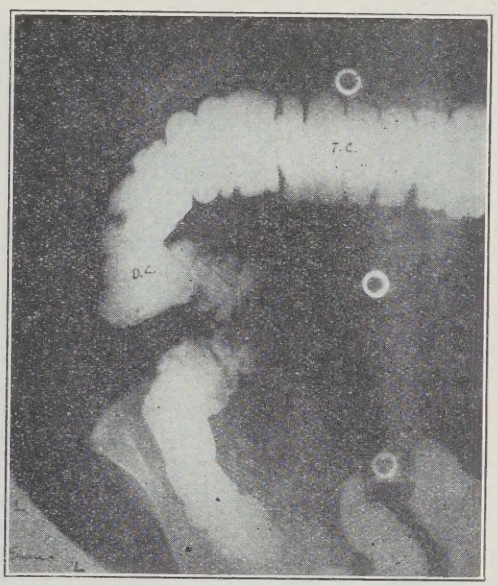
The third group is characterised by the fact that there is an enormous dilatation and hypertrophy of a portion of the canal, but a most careful post-mortem examination fails to reveal the presence of any obstruction. The change is sharply limited below, usually at the level of one of the fixed sphincters, and although in life X ray investigation shows that there is an obstruction at this site, yet after death no change can be demonstrated in the muscle of the sphincter.

CARDIOSPASM, OR ACHALASIA OF THE CARDIA.

Ætiology and Pathology.—The condition may occur in either sex. In my own series of 33 cases, 16 were males and 17 females. Most commonly the patients seek treatment at or about middle age, the average age of my cases being 48. I have, however, for long been convinced, owing to the enormous amount of dilatation and hypertrophy, that the change has gradually developed since birth. In later life, owing either to increase in weakness or to the sudden onset of some acute illness, compensation has failed, and symptoms have developed. This view is now supported by the fact that a considerable number of cases have been reported in young children and others in adults in whom symptoms have dated back for many years. Langmead has reported a case in a child of 16 months and Still two patients aged 2 and 5, in all of whom the symptoms dated back to birth. Poynton also has reported a case, aged 9, with a history from the age of 11 months, and Parkes Weber collected reports of 11 cases occurring in the first seven years of life. In the 33 cases in my own series, the youngest was aged 10 years, with symptoms from birth. In several others the symptoms dated from an acute illness suggesting that this was the cause of the failure of compensation in a long-established condition. It would therefore appear that the lesion is often a congenital fault.

The pathological changes consist of an enormous dilatation extending from just below the cricoid cartilage. In the earlier stages it ceases abruptly at the level of the diaphragm, but later extends to the cardiac orifice. It was the termination at the level of the diaphragm which formerly gave rise to the belief that the obstruction was caused by spasm of that muscle. With the dilatation there is usually some lengthening, and owing to the varying combination of these two changes different varieties are

FIG. 3.



Two areas of spasm of the descending colon, the upper of which closely resembles carcinoma. (The print has been reversed.)

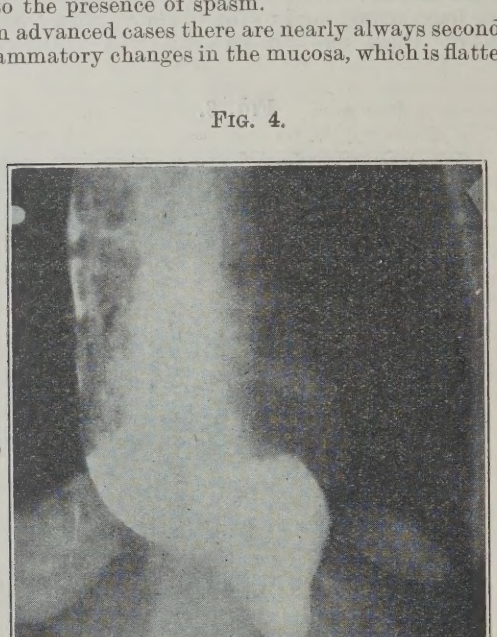
described. Moore, who has paid much attention to the pathological aspect of this subject, described a fusiform variety which is the commonest; a flask or pear-shaped type and an "S"-shaped form which is uncommon. In advanced cases the dilatation may be sufficient for the œsophagus to contain a pint or more. It is always the most characteristic feature as seen in the X rays (Fig. 4), and there is no other condition which causes so extreme a dilatation. In association with the increased capacity there is an enormous hypertrophy of the muscular wall, and it is this change which so sharply differentiates the conditions in this group from those in the last. The amount of hypertrophy is commensurate with the dilatation, but in some cases, presumably early examples in which there is good compensation, the hypertrophy dominates the picture. The thickening of the wall commences gradually above at the level of the cricoid cartilage and, increasing below, ceases abruptly with the dilatation either at the level of the diaphragm or the cardiac orifice. The cardiac sphincter shows no hypertrophy, a point on which Hurst lays great stress in his argument that the condition is a failure of the sphincter to relax rather than to go into spasm. I know, however, of no condition of proved spasm of involuntary muscle which is associated with hypertrophy. The

conditions always thought to be spasmodic never show any such change, but, as Hurst says, these also are probably conditions of achalasia. He described hypertrophy as occurring with spasm of the anal sphincter, but I have been unable to find in my own experience an example of such a change.

In my own cases a bougie passed down the œsophagoscope was always found to be gripped by the sphincter in so definite a manner that it could readily be demonstrated, and there was thus no doubt as to the presence of spasm.

In advanced cases there are nearly always secondary inflammatory changes in the mucosa, which is flattened

FIG. 4.



Radiogram of case of "cardiospasm."

and smooth and may show areas of superficial ulceration. In long-standing cases there are patches of leukoplakia which may pass on to carcinoma. Souttar has reported such a case, and Hurst mentions several such in the literature and in his own experience.

The enormous hypertrophy of the wall of the œsophagus, the powerful contractions which may be seen on radiographic examination, and the forcible ejection of the œsophageal contents make it evident that there is no paralysis of the œsophageal wall. For this reason, and because no obstruction could be demonstrated, Mikulicz suggested that there was a spasm of the cardiac sphincter; Hurst, however, strongly supports the view first enunciated by Einhorn that there is a failure of the sphincter to dilate rather than a spasm. He bases this view largely upon the fact that he could find no spasm, and that a bougie could be easily passed. He therefore calls the condition "achalasia of the cardia." He supports the findings of Kraus that there is a degenerative change in the vagus, and he and Rake were able to demonstrate such a lesion in 11 cases which were examined. If this degeneration extends upwards beyond the cardiac area it is remarkable that even in the late stages the muscle of the œsophageal wall is greatly hypertrophied and forcible peristaltic waves are present. Hurst also states that inflammation of the œsophagus may give rise to a secondary spasm of the sphincter. This may be the explanation of why a bougie was never gripped in his cases, while in my own—which were probably more advanced examples—it was always firmly gripped by the sphincters.

Symptoms.—In most of my cases the symptoms have been present for many years. In my youngest patient, aged 10, they dated back to birth. In some cases there has only been a short history which has then not infrequently dated from an acute illness suggesting that this has been the cause of the failure in compensation. The onset may be with pain or a feeling of obstruction. If care be taken in obtaining the details of the history of the early stages there is, as a rule, but little difficulty in making a correct diagnosis. The history is much more prolonged than with carcinoma of the œsophagus. The obstruction is variable, and in the earlier periods is often more marked to the passage of fluids than to that of solids. Sometimes the solid food sticks and only passes after the taking of a considerable amount of fluid, this probably forming a sufficiently high column to overcome the obstruction. In the earlier stages regurgitation occurs after the ingestion of a few mouthfuls, but later the œsophagus becomes so dilated that it may accommodate the whole meal before regurgitation occurs, and thus the condition may easily be mistaken for one of pyloric obstruction. In one of my cases a gastro-enterostomy had been performed elsewhere on this supposition. If the history has been carefully taken this mistake will be easily avoided. The nature of the obstruction should not be confused with an œsophageal pouch for in the latter the difficulty in swallowing increases as the meal progresses, and there is only the regurgitation of a small quantity of material, which is often foul. Diagnosis can always be confirmed by X ray and by œsophagoscopy. By the former, the site of the obstruction, the narrow but regular passage and the enormous dilatation of the œsophagus are characteristic; with the latter the large quantities of fluid moving up and down with respiration; the great dilatation and the smooth but contracted orifice below give a picture obtained with no other lesion.

Treatment.—The evidence that the condition is due to a relative paralysis of those vagal impulses which supply the sphincter is so strong that the rational procedure would seem to be to overcome the relative overaction of the sympathetic impulses by division of these fibres. Such an operation, however, is one of considerable difficulty, and would appear to be unnecessary in that powerful contractions of the muscle wall of the œsophagus are always present. I have been unable to find an account of the operation having been performed. The spasm of the sphincter or its failure to relax may be more readily overcome by forcible stretching. This has been performed by two methods. In the one, a dilator is passed from above. Whether this dilator be a simple or mercurial bougie, as used by Hurst, or a hydrostatic dilator as used by Plummer, it has the objection that the dilatation is relatively incomplete, and thus the condition tends to recur, so that the dilatation has to be repeated on many occasions. It is claimed by Hurst and Plummer that the measure of relief may be so complete that in the earlier stages at any rate the patient may be enabled to live a useful and comfortable life by its use. In my own series of 14 cases there have been 14 where this method has failed after prolonged trial. This is very possibly due to the fact that most of the cases which seek surgical aid are far advanced. Five cases in my

series were seen in the early stages and have been treated with dilatation with bougies with complete success. It is true that the dilatation has to be repeated at relatively frequent intervals, generally once a month, but they have lived and taken food in comparative comfort, one for nine years, one for six, two for four, and one for one year. The other method, which was first introduced by Mikulicz, is that of dilatation from below with the fingers, introduced through the opened stomach. The drawback of this method is that it is an operation of considerable magnitude. It aims at so forcibly dilating the sphincter, that the muscle-fibres, if not torn, are so widely stretched that they are permanently paralysed. There is thus the risk that on the one hand the procedure is not carried sufficiently far, so that after a time the paralysed fibres recover and the symptoms return. On the other hand, if the stretching is carried too far the mucosa may be lacerated, and severe hæmorrhage with later a fibrous stricture occur, or even the whole wall be torn and a fatal infection spread to the mediastinum. For this reason the dilatation must always be performed with the fingers, for with any form of instrument insufficient control would be obtained. In practice the results, if the method be carefully used, are so satisfactory that any of the more dangerous operations of performing an anastomosis between the stomach and the dilated œsophagus are unnecessary. Nor is it indeed likely that any operation upon the sympathetic fibres will give more satisfactory results.

My own series includes 33 cases in all. Of these, 22 were treated by digital dilatation from below through the opened stomach, 14 of them after the prolonged passage of bougies had failed. Of these 22, three died after operation, one, a patient with myocardial degeneration, from cardiac failure, one from post-operative pneumonia, and one from sepsis following a tear of the œsophageal wall from excessive dilatation. Of the remaining 19, 13 have remained in perfect health for periods extending up from one to 11 years. They can eat anything and have required no after-treatment. Six have not been complete successes; one of these was dilated with only one finger. The condition recurred and was dilated again to four fingers, since when he has remained in perfect health for four years. One developed a fibrous stricture, evidently from a tear of the mucous membrane, and has only obtained incomplete relief from the passage of bougies. Four have slight difficulty after seven, six, three, and one year respectively, but this is insufficient to require any further treatment, there being only an occasional feeling of obstruction which is relieved by a copious drink. When it is remembered that without treatment this lesion is steadily progressive, and not only causes grave discomfort but ultimately leads to profound wasting and starvation, going on to death, there is no doubt that this operation must be regarded as satisfactory, and with more experience may be looked upon to bring about a complete cure in the majority of cases.

PYLOROSPASM.

Conditions of spasm of the pyloric sphincter as a reflex phenomenon and as part of the relative paralysis of all vagal impulses have already been discussed. The well-known condition of congenital pyloric stenosis, and the rarer examples with a similar pathology which are found in adults, have by many been regarded as due to prolonged spasm of the pyloric sphincters, and the lesion is indeed often described as an example of the amount of hypertrophy which will follow a simple spasm. That the condition in young infants is one of spasm is, in my opinion, definitely disproved by the fact that it may occasionally be found in the fœtus, that so great a degree of hypertrophy would be impossible in the two or three weeks in which symptoms have been present, that it is frequently present in several members of the same family or in both of twins, that the hypertrophy persists in spite of complete rest by gastro-enterostomy, and I believe, in spite of the recent work of Wolff, that cases said to be cured by medical treatment are in fact only relieved in part, and tend to recur later in life. For these reasons I would insist that this change is a congenital deformity and is not in any sense of the word a neuro-muscular lesion.

It would be expected that with such definite neuro-muscular lesions as cardiospasm and Hirschsprung's disease, a precisely similar change would be found in the stomach; that is to say, one in which there is an enormous dilatation and hypertrophy of the stomach but no visible obstruction after death. It has, in fact, been claimed that such a condition does occur in young infants and that the visible peristalsis from the hypertrophied stomach may give rise to an erroneous diagnosis of congenital pyloric stenosis, but at operation the characteristic hypertrophy of the sphincter is not found. My colleague, Dr. K. H. Tallerman, tells me that he has seen one such case, but although I have for long been searching for such a condition I have failed as yet to find an example. It would, therefore, seem as though a relative paralysis of vagal impulses to the sphincter of the stomach, if it does exist at all, is of extreme rarity.

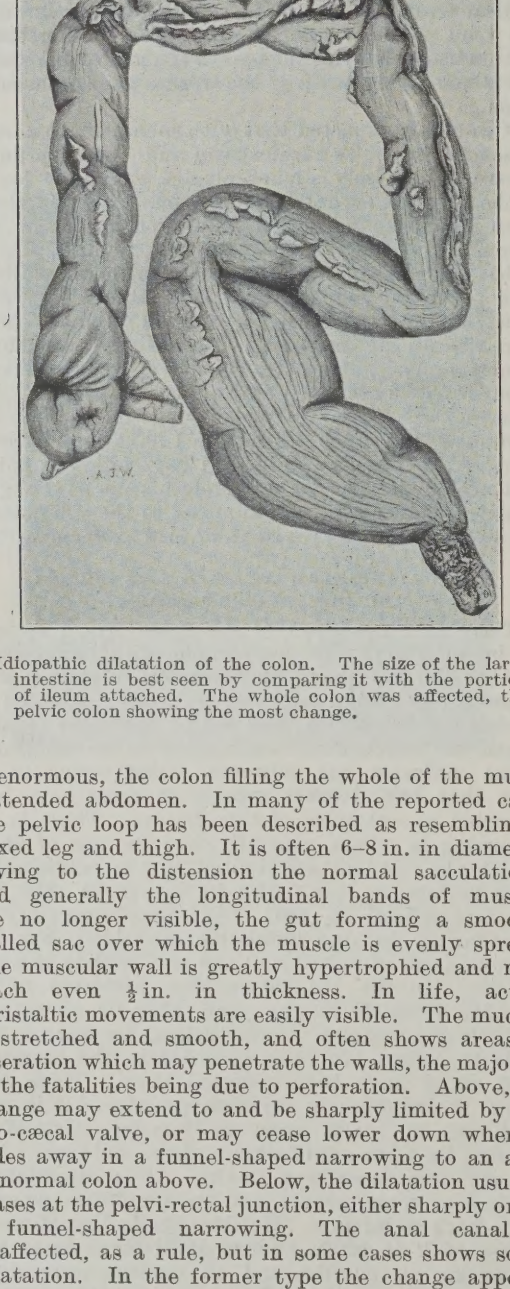
IDIOPATHIC DILATATION OF THE COLON: HIRSCHSPRUNG'S DISEASE.

There is a condition of the colon which appears to be in every way comparable with cardiospasm in that the gut shows an enormous dilatation with hypertrophy of the muscular wall and evidenced by profound constipation, and yet at operation or after death no mechanical obstruction is to be found. Some confusion has, however, arisen owing to the fact that two distinct groups of cases have been reported as examples of this disease. There is one occurring in adults, generally over the age of 50, in which the changes are limited to the pelvic colon. This variety, as was shown by Treves, in 1899, and by Lowenstein, in 1907, has almost certainly no relationship to true idiopathic dilatation, but is a chronic form of volvulus. The true variety is a rare disease. In the 131,000 patients admitted to the London Hospital in the years 1900–09, there were only four examples. Nevertheless, Lowenstein was able to collect 120 cases recorded in the literature, and many have been reported since. There have been 12 examples in my own practice. It is more common in males than in females, Hale-White stating that five out of six are of the male sex. Nine of my own cases were males. It is essentially a disease of young people, and the symptoms generally date back to infancy. Hawkins states that it always dates back to birth, and reported three cases aged 3 weeks, 10 months, and 12 months respectively. Ladd has also reported five cases in children aged 2 months, 3, 6, 7, and 9 years respectively, while Popper has had the interesting experience of observing the condition in each of twins aged 4 days. There can thus be no doubt that the disease is of congenital origin, although, as with cardiospasm, the onset of symptoms may be delayed for a long period.

The characteristic pathological change consists of an enormous dilatation and hypertrophy of the

gut (Figs. 5 and 6). As a general rule the whole of the colon from the pelvi-rectal junction to the cæcum is affected, although the change is generally more marked in the lower part of the gut. The dilatation

FIG. 5.



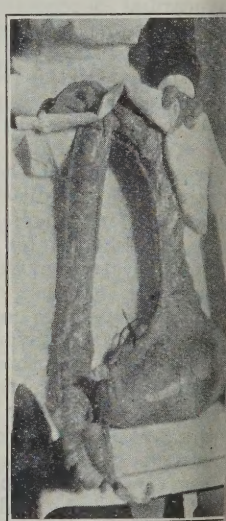
Idiopathic dilatation of the colon. The size of the large intestine is best seen by comparing it with the portion of ileum attached. The whole colon was affected, the pelvic colon showing the most change.

is enormous, the colon filling the whole of the much-distended abdomen. In many of the reported cases the pelvic loop has been described as resembling a flexed leg and thigh. It is often 6–8 in. in diameter. Owing to the distension the normal sacculations, and generally the longitudinal bands of muscle, are no longer visible, the gut forming a smooth-walled sac over which the muscle is evenly spread. The muscular wall is greatly hypertrophied and may reach even ½ in. in thickness. In life, active peristaltic movements are easily visible. The mucosa is stretched and smooth, and often shows areas of ulceration which may penetrate the walls, the majority of the fatalities being due to perforation. Above, the change may extend to and be sharply limited by the ileo-cæcal valve, or may cease lower down when it fades away in a funnel-shaped narrowing to an area of normal colon above. Below, the dilatation usually ceases at the pelvi-rectal junction, either sharply or by a funnel-shaped narrowing. The anal canal is unaffected, as a rule, but in some cases shows some dilatation. In the former type the change appears to end at the sphincter between the pelvic colon and rectum, in the latter at the anal sphincter. It is probable, however, that the sphincter action of this portion of the gut is not divided into separate portions, but that the whole of the anal canal should be empty and contracted by sphincter action, and that, as in the case of cardiospasm, the condition in the early stages terminates at the upper end of the sphincter, while in the later stages the upper portion may have dilated. Martin and Burden found that in 31 cas there was an abrupt change in the appearance of t mucous membrane between the sigmoid and t rectum.

Many theories have been put forward to explain t remarkable changes that are found. Barringto Ward even quotes 13. Many of these attempt show that there is a mechanical obstruction from t presence of a valve, kink, or volvulus, but there is doubt that no such obstruction exists. No narrowi can be found post mortem, and in life simple a opaque enemata may be easily passed. The mark hypertrophy of the gut wall and the visible and acti peristalsis make it evident that there is no paralys There is, therefore, a growing tendency to acce the view that the lesion is a neuromuscular fau Treves stated that he believed some of the cases be due to an error of innervation, a view that w elaborated by Hale-White and Shattock. The fa that the dilatation is sharply limited at the si of the sphincter below, and that after death t obstruction has disappeared, shows that the chan is identical with that of cardiospasm and due to error in the sphincter. As with the latter diseas Hurst believes that there is an achalasia rather th a spasm; the ease with which enemata may administered would certainly support this view, t condition being due to a relative paralysis of t vagal impulses to the sphincter.

Symptoms.—In most cases the symptoms date fro birth, but in others the obstruction is, as in the ca of cardiospasm, apparently overcome by the hype trophied muscle, and symptoms only appear compensation fails. There is a steadily increasing constipation, at first easily relieved with aperients and enemata, but later only with difficulty. In some curious cases there are prolonged periods of relief during which the bowels are opened regularly. The attacks of constipation, however, steadily increase in frequency and severity until the bowels are only opened once every week or perhaps even only once in every two or three weeks. At this stage there is considerable abdominal pain of a colicky nature. As the disease progresses, the abdomen becomes distended until it is enormous and may cause some embarrassment of respiration (see Fig. 7).

FIG. 6.

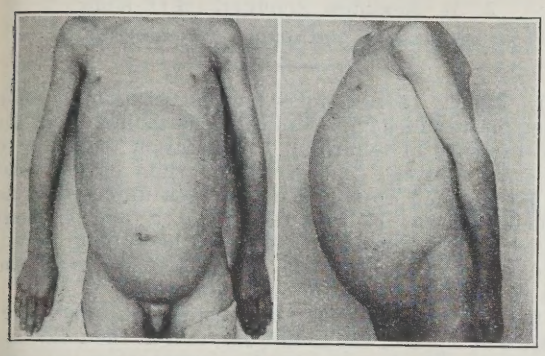


Idiopathic dilatation of colon. Specimen from boy aged 11.

In some cases the distension is uniform, but in others a localised area may be distinguished, due to the dilated pelvic colon. In this, hard scybalo masses may often be felt through the abdomin wall, and peristalsis of the gut wall is near always visible. Although the distension is so gre the patients may for some years appear to be remarkably good health, but later the evidences pressure are increased, the lower ribs being expande the diaphragm and heart pushed upwards, and t veins compressed so that the legs are œdematou there are visible and distended veins on the abdomin

wall and albuminuria is present. Occasionally, as in a case reported by Langmead, tetany may be present. In the later stages, attacks of subacute obstruction with increasing pain, absolute constipation, and vomiting occur. Thus, cases recognised in early life did not, as a rule, live to adult age. Of 24 cases studied by Crozer Griffith, in 1899, only three survived

FIG. 7.



Abdominal distension with Hirschsprung's disease in a boy aged 11.

childhood. Examination with the sigmoidoscope shows only an enormous dilatation of the pelvic colon, and there is no trace of any mechanical obstruction or valve. It is sometimes stated that a tight spasm of the anal canal can be distinguished, but in the 12 cases in my own series no abnormality could be made out. On X ray examination the enormous dilatation of the colon is often easily distinguished before any barium enema is given owing to the large amount of gas in the distended colon. A barium enema often does not greatly improve the picture, for the cavity is so large and contains so much fæcal material that the barium is badly distributed.

Treatment.—Until a few years ago it was believed that the fault lay chiefly in the wall of the gut, so that, although it was hypertrophied, it was failing to function in a correct manner. Hence, operative treatment was directed towards diversion of the contents from the affected portion of the gut. Discussion therefore centred around the relative merits of colostomy, ileocolostomy, and partial or complete colectomy. The two latter operations gave the most satisfactory results, and in some cases, as in two of my own series, appeared to bring about a complete cure. Ito and Soyesima found that of 21 cases of complete colectomy, 14 were cured, and Giacinto reports 80 cases of colectomy with 59 recoveries. It is probable that in these cases relief was gained owing to the fact that the contents of the pelvic colon after operation were fluid, and thus were more readily passed. The operation was, however, associated with a high mortality in patients often young and in poor health. According to more modern views, these operations were based upon a wrong conception of the pathology. If the cause of the obstruction is, as is believed, a spasm or an achalasia of the anal or the pelvi-rectal sphincter, the correct treatment would be to overcome this, either by forcibly and, if possible, permanently dilating it, or by removing the relatively overacting sympathetic impulses, and thus allowing the sphincter to dilate. Fullerton, being struck with the similarity of this lesion to cardiospasm, treated a boy, aged 2 years and 4 months, with forcible dilatation of the sphincters, at first with the fingers and later with a rubber bag filled with water. Five months later the child was free of all symptoms. This method is so simple, and brings the treatment into line with that of cardiospasm for which dilatation has been so successful, that it is worthy of further trial. Owing, however, to the well-known work of Royle, who, in his operations upon the lumbar sympathetic cord, found that a patient who had suffered with severe constipation was entirely relieved, attention has been more fully directed upon this line of treatment. In 1926, Bartle, and in 1927, Wade and Royle, advocated lumbar ramisection as a means of treatment. At the recent meeting in Winnipeg, Royle, Learmouth, and Wade all enthusiastically supported the method; Royle stating that it gave excellent results in all cases, and Wade reporting 14 cases with striking improvement in all but one.

Comment.

The conditions which I have described are not only of interest in that for many years they have led to much discussion as to their cause, but they direct attention to one of the most important problems of modern medicine. They all show a congenital and often an hereditary fault. In some the actual disease dates from birth, in others it is only the tendency which appears to be congenital. They also appear to be getting more frequent, so that together they now form a large proportion of all abdominal cases. With the control and consequent diminution of acquired disease there is no decrease, indeed there appears to be an increase in the congenital faults of the race. We hear to-day everywhere discussed the question of birth control, but what we, as a medical profession, must consider and discuss is whether there is not rather a need for compulsory birth control. It has always been a matter of astonishment to me that a race of people who will pay enormous sums for pedigree stock animals confine their attention, at great cost, entirely to environment when considering the benefit of the human species. Will the day come when it will be regarded as a criminal act for a couple to bear children before they are proved to be of good stock, and have shown that they are able to make some provision, either by insurance or investment, for the welfare of their children?

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DONATIONS AND BEQUESTS.—Among other bequests, the late Mr. William Law, of Clevedon-drive, Kelvinside, Glasgow, left £3000 each to the Glasgow Royal Infirmary, the Glasgow Western Infirmary, and the Victoria Infirmary, Glasgow; £1000 each to the Sick Children's Hospital, Glasgow, and the Broomhill Home for Incurables, Glasgow; £500 each to the Seamen's Hospital Society ("Dreadnought"), Greenwich, the Home for Infirm Children, East Park, Glasgow, the Largs Convalescent Home, the Kilmun Convalescent Home, and £250 to Glasgow and West of Scotland Seaside Convalescent Homes, Dunoon.—Mr. Herbert Samuel Thrower, of West Heath-avenue, Golders Green, left by will, in addition to other legacies, £2000 to the Hampstead General Hospital, for beds for the benefit of employees of his firm, and, conditionally, £500 for general purposes, and £1000 to the Metropolitan Convalescent Institution towards the upkeep of the Bexhill Convalescent Home. The ultimate residue of the property will be divided between the Metropolitan Convalescent Institution, the National Institution for the Blind, King Edward Sanatorium at Midhurst, the Children's Hospital, Great Ormond-street, and the Mount Vernon Hospital.

THE TOXICOLOGY OF THALLIUM.

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IN March, 1861, Crookes,[1] whilst examining some selenium residues in a sulphuric acid manufactory for the presence of tellurium, had occasion to resort to spectral analysis. Observing a bright green band (λ 5350) which up till then had been unrecorded, he concluded that he had discovered a new element which he presumed to belong to the sulphur group and to which he gave the name thallium, from the Latin "thallus," a green or budding twig.

Lamy[2] independently discovered the same substance in April of the same year, and in the following year was able to isolate it in a state of purity and determine its properties. He suspected from the first that its compounds were toxic, for whilst engaged on this research he suffered from general lassitude and weakness of the lower limbs. He administered thallous sulphate to a number of animals, but did not record the dose given. They all died, some more rapidly than the others; the symptoms which he emphasised were weakness, abdominal pain, loss of appetite, trembling, paralysis of the hind limbs, and difficulty in breathing. Crookes, however, did not believe that thallium was toxic, and reported that he had taken doses of one to two grains and had felt no ill-effects.

Since then many observers have experimented with thallium, and in 1899 Richet[3] published an article on its toxicity in which he stated that chronic poisoning was commonly associated with generalised muscular atrophy. This observer, according to Cushny,[4] was the first to record the epilating effect of thallium, although Sabouraud is usually credited with the discovery. About this time (1898) it first appears to have been used therapeutically, when Combemale[5] advocated the use of the acetate for the night-sweats of phthisis and recommended doses of 10–20 cg. He found no toxic symptoms, but noticed that its use was followed by a complete and rapid loss of hair. Jeanselme[5] in the same year reported loss of hair in a phthisical patient who received 0·27 g. in three days, and Guinard[5] reported a similar event after nine pills each containing 0·05 cg. Buschke,[5] in 1900, and Betman,[5] in 1901, succeeded in producing a similar effect in animals. Pozzi and Courtade[5] used thallium iodide in doses of 0·01 g. daily for syphilis and reported good results, but it is doubtful whether thallium has any specific effect in this direction.

About 30 years ago Sabouraud first started to use thallium as a depilatory in ringworm, but eventually came to the conclusion that it was too highly toxic and dangerous and abandoned it. In all probability the reason of his failure to get good results was the administration of too large doses, for he apparently did not base the dose on body-weight. Attempts have also been made to use thallium salts in the form of a cream, as a local depilatory, but Dixon states most definitely that unless thallium is absorbed it has no epilating action, and when applied locally

it has no effect whatever. After Sabouraud abandoned the treatment, it does not appear to have been used to any extent until Cicero,* of Mexico, in 1909 attempted to use thallium for ringworm. In 1918 he published a favourable report of 439 cases, and followed this up in 1922 with a further report. In Europe, however, the treatment has only been revived recently, and Buschke has elaborated a standard system of dosage for general use.

In 1914 Buschke [6] reported his first experiments on rats; he came to the conclusion that the alopecia produced by thallium salts was due to nervous influences, and later, in 1922, he suggested that the epilation was produced in some way through the ductless glands. In 1926 Buschke, Langer, and Peiser [6] treated a number of children suffering from ringworm and fixed the minimum dose for producing epilation at 8 mg. of thallium acetate per kg. of body-weight. The drug was given by mouth in a single dose, sweetened, and on an empty stomach, as they found that if it were taken with food epilation was not so complete. Buschke also emphasised the importance of vigorous local treatment during epilation.

This method of treatment is now widely used, and many observers have published their results. Dowling,[7] who was one of the first to use the method in this country, is of opinion that 8 mg. per kg. is not always sufficient to bring about epilation, and he recommends 8–9 mg. per kg., using 8·5 mg. generally and 9 mg. for dark-haired children who do not epilate so easily and in those cases where the tinea is most marked on the crown of the head, as the hair does not come out so readily in this region. In all cases the children are weighed nude, and a full clinical examination, including that of the urine, is made. If these precautions are carried out, it is stated that no toxic symptoms should appear. They occur, if at all, about eight or nine days after the dose; they take the form of joint pains in the lower limbs, loss of appetite, drowsiness, and hypochlorhydria. The administration of hydrochloric acid will generally correct the last condition, and as some degeneration of the thyroid and suprarenals has been noted in several cases, administration of these glands is suggested.

It is now universally agreed that it is unsafe to administer an epilating dose to adults or to children about 10 years of age. Recently the tendency has been to give the drug only to younger children. The younger the child the greater the tolerance, and a smaller dose per body-weight is, of course, required. If these points are observed the advocates of this treatment maintain that it is perfectly safe, and that any untoward symptoms are only due to a personal idiosyncrasy, an accidental overdose, or impurities in the drug, although there should not be the slightest difficulty at the present time in obtaining thallium acetate in a state of chemical purity, nor should it deteriorate in solution. With the increasing use of this drug attention has been directed to the mechanism of its characteristic action.

Dixon [8] is of opinion that it acts through the autonomic nervous system, and support to this theory is given by the findings of other workers—namely, that the hair of the scalp only is under the trophic influence of the internal secreting glands through the sympathetic nervous system, and therefore the hair of the rest of the body, including the internal two-thirds of the eyebrows and a fringe at the edge of the forehead, does not come out. Cortella [9] has experimented with white rats, giving them daily a very small quantity of the drug (1–2 c.cm. of a 1–50,000 solution of thallium acetate in milk) with the object of ascertaining if any changes occur in the central nervous system with this dosage. He is of opinion that there were changes and that they were proportional to the dose given, and although with minute doses body-weight increased, wasting always occurred with toxic doses.

* As we have not been able to obtain a copy of these reports, we are not in a position to state the number of toxic cases, if any, which occurred in Cicero's series.

Chemistry of Thallium.

In the periodic classification of the elements the position of the metal falls into group 3 which, except for boron and aluminium, contains some of the rarest elements. Group 3 is subdivided into two subgroups A and B, and it is to the latter group that thallium belongs. Although it has certain properties similar to those of boron and aluminium, thallium presents certain differences which rendered its correct place in the periodic classification a matter of speculation for some years. Thus the more stable salts are monovalent—i.e., Tl′ as opposed to the less stable trivalent salts (Tl′′′). Boron and aluminium only function as trivalent elements (B′′′ and Al′′′). Thallium, further, shows many chemical properties in common with lead, which is next to thallium in order of atomic weights (Hg : 200; Tl : 203; Pb : 207), especially in respect to the halogen derivatives; thallium, moreover, is a soft malleable metal like lead. The thallic (Tl′′′) compounds—e.g., Tl_2O_3, on the other hand, resemble those of boron and aluminium—e.g., B_2O_3 and Al_2O_3. There is also a resemblance to metals of other groups—e.g., silver, potassium, and mercury. It is noteworthy that thallium, from a toxicological point of view, shows a distinct affinity for nervous tissue, as will be seen in the cases under review, and the profound effect that this metal has on the central nervous system is especially noticeable in the three cases of poisoning which we have examined. In this respect there are many points of similarity to lead.

Thallium is used in the manufacture of optical glass when a high refractive index is required. It is also used in the production of tungsten lamps, and has photo-chemical and photo-electrical properties.

Three Cases of Poisoning by Thallium.

The three cases—A., aged 10 years; B., aged 7 years, and C., aged 5 years—were brothers, and attended a skin hospital in London on Feb. 28th, 1929. They were found to be suffering from small-spored ringworm of the scalp; this was confirmed microscopically. They were well-developed healthy boys and the usual medical examination was made. A. weighed 4 st. 4 lb., B. weighed 3 st. 13 lb., and C. weighed 3 st.

The drug was administered on March 14th, when each received a dose of a solution of thallium acetate which, by an error of the dispenser, was made up ten times too strong. It was intended to give the two eldest boys 0·25 g. or 3·9 gr. and 0·23 g. or 3·6 gr.—i.e., 8·5 mg. per kg. of body-weight. The youngest was to have received 0·18 g. or 2·8 gr.—i.e., 8·9 mg. per kg. of body-weight. Actually each received ten times this quantity—namely, 39, 36, and 28 gr. respectively.

The boys returned home and went to bed as usual at 8.30 P.M. feeling perfectly well. About one hour later B. complained of pains in the stomach and sore-throat, had a hard, sharp cough, and was very restless. A little later A. complained similarly, and both were unable to swallow when water was given them. They became drowsy and passed a fairly peaceful night, during which B. vomited a little. In the morning A.'s face was drawn and he complained that he could not open his mouth or eyes, and by this time the youngest was complaining in a similar manner. They all remained drowsy during the day, and about 7 P.M.

that evening B. seemed much worse. When the doctor arrived B. was dead and A. was tossing about with jerky convulsive movements; his eyes were closed but the pupils were widely dilated. Frothy mucus was escaping from the nostrils and mouth, and the breathing was of the Cheyne-Stokes type. The pulse-rate was rapid and the extremities cold. He lived only a few minutes.

The next morning the youngest child was admitted into Westminster Hospital under Dr. D. H. de Souza, to whom we are indebted for the following notes. The child was then in a semi-conscious condition; there was no vomiting or diarrhœa, but the throat was sore, with inability to swallow. The temperature was 97·6° F., the pulse-rate 120, and the respiration-rate 25. The eyes reacted to light, and there were rhonchi all over the chest. The child seemed to improve slightly during the first part of the night, but died suddenly about 4 A.M.

POST-MORTEM EXAMINATION.

We are indebted to Dr. W. D. Newcomb for the following notes.

The children A., B., and C. received such a large dose that death ensued relatively early, and one would expect the changes in the organs to be different in cases dying after a longer time. The lesions in these cases were severe parenchymatous degeneration in all the organs examined. There were slight variations in the three cases, but these are explicable by the differences in age. All had approximately the same dose per kg. of body-weight and, as might be expected, the two eldest died first with more acute changes in the various viscera. In the youngest, who lived three days, there was time for the degenerations to become more obvious.

The *stomach* in each case contained a little mucus and showed submucous petechial hæmorrhage. In all the *hearts* there was a remarkable degree of fatty degeneration with "tabby cat" distribution. This was most marked in the youngest child, who survived longest. In the child who died first the lesion was confined to the left side, but in the others it was present in both ventricles. A slight perivascular fatty infiltration and scattered leucocytes could also be seen in each case. The *livers* showed congestion and fatty degeneration situated in the centres of the lobules. The condition was most marked in the youngest child, and here there was also some peripheral fatty infiltration. The *kidneys* were congested and showed toxic changes which varied considerably in the three cases. In the middle child, who died first, the capillary engorgement was intense, the glomeruli were swollen, and a little fat was present in the ascending limb of Henle. Severe cloudy swelling and necrosis of cells was also seen in the convoluted tubules. In the youngest child the congestion was less marked, but more fat was present in the Henle tubules, and karyolysis of the nuclei in the convoluted tubules was prominent. The eldest child showed an intermediate condition The *spleen* was congested and showed an excess of eosinophilic leucocytes in the pulp. This was most marked in the eldest, and probably indicated an eosinophilia in the blood. This has been noted in other recorded cases of thallium poisoning, but it is doubtful whether it is really due to the drug. It is very unlikely that such a change could occur as quickly as 29 hours after poisoning and, as many cases of ringworm show eosinophilia, this would appear to be the most likely explanation. The right suprarenal of the eldest child was available for examination, but no changes were found in it other than those accounted for by post-mortem decomposition.

It appears, then, that in large toxic doses thallium acts as a mild irritant to the stomach. It poisons the more highly specialised cells of the body, causing marked fatty degeneration in heart and liver and necrosis in the kidney. These changes are rather like those seen with the phosphorous group of poisons, but differ in that the fatty degeneration is most marked in the myocardium. In this respect thallium appears to be unique.

ANALYSIS OF THALLIUM IN VISCERA.

The estimation of thallium in viscera or urine presents no great difficulty. A weighed quantity of the material is broken up with hydrochloric acid and potassium chlorate by the method of Fresenius and von Babo and, when solution of all the material except the fat has been achieved, the liquid is filtered (well washing the precipitate), and the filtrate boiled until practically all the excess of chlorine has been driven off or removed by the sulphur dioxide method. If necessary it is filtered again, discarding the precipitate. To the filtrate ammonium chloride and ammonia are added until it is distinctly alkaline, and it is then again boiled. The precipitate, which consists of iron, calcium, and magnesium, chiefly in the form of phosphates, is filtered off and discarded. It may be advisable to add a small amount of calcium chloride solution to the liquid before the ammonia to ensure complete removal of phosphate.

The filtrate is then saturated with sulphuretted hydrogen or an excess of freshly prepared ammonium sulphide is added; a black precipitate is then formed. This precipitate is filtered off, well washed with dilute ammonium sulphide, and finally with distilled water. It consists of thallium sulphide (Tl_2S), together with traces of other metals which precipitate with sulphuretted hydrogen in alkaline solution and which have not been previously removed, but so far as toxicological analyses are concerned the only likely metal to be present—and then only in traces—is copper. When the precipitate is completely washed it is dissolved off the paper with hot dilute hydrochloric acid. The thallium is converted into thallous chloride (Tl Cl) and any trace of copper which was present as the sulphide remains behind, for this sulphide is insoluble in dilute hydrochloric acid. To the solution ammonia is added in slight excess and the liquid is boiled. If the process of separation has been complete no precipitate should occur at this stage. Any precipitate should be filtered off and discarded. The filtrate is then made very faintly acid with hydrochloric acid, and excess of potassium iodide solution is added. An immediate yellow precipitate of thallous iodide (Tl I) forms. As there is some tendency for thallous iodide to come down in colloidal form, the liquid should be boiled and allowed to stand for 12 hours.

The precipitate is then collected in a weighed Gooch crucible and is well washed, first with potassium iodide solution and subsequently with alcohol, until the washings give no reaction for an iodide. The crucible is then dried at 120° C. until constant weight is obtained. Although thallous iodide is very slightly soluble in water (1–17,000), it is almost completely insoluble in potassium iodide solution and in alcohol, so that filtration in the cold and washing with these reagents will give an accurate estimate of the amount present. The iodide after weighing may be confirmed as thallium by dissolving it in a solution of sodium thiosulphate, in which it is only dissolved with difficulty, whereas lead iodide is readily soluble. Finally, some of the iodide may be heated in a Bunsen flame on a platinum wire and the characteristic green line in the spectrum obtained.

AMOUNTS FOUND IN THE VISCERA EXPRESSED AS THALLIUM ACETATE.

—	Case A.		Case B.		Case C.	
	grains.	mg.	grains.	mg.	grains.	mg.
Stomach ..	0·24	15·6	0·11	7·4	—	—
Liver ..	0·9	58·1	1·33	86·2	0·74	48·2
Intestines ..	1·4	90·8	1·73	112·8	0·23	15·0
Kidneys ..	—	—	0·12	7·9	0·09	6·0
Urine ..	—	—	—	—	0·28	18·2
Total ..	2·54	164·5	3·29	214·3	1·34	87·4
Amount given	39	2527	36	2333	28	1814
Amount intended to be given	3·9	253	3·6	233	2·8	181

B, who died first, had eliminated less of the drug than A, who was given a larger quantity.

Dangers of Thallium.

Although the three fatal cases which have prompted the publication of this article were purely accidental and can in no way be used as an argument against the use of thallium in the treatment of ringworm (for regrettable incidents of this type have occurred with many drugs), a survey of the literature of the toxicology of thallium has made a deep impression on us, and we think that some useful purpose is served if a warning is given of the dangers of the drug.

In the literature, which is now fairly extensive, the following cases seem worthy of brief summary. Twiston Davies[10] gave thallium acetate to two sisters: F., aged 11 years, who received 8·5 mg. per kg., and M., aged 8, who received 8·75 mg. per kg. of body-weight. M.'s condition was normal throughout, and she epilated successfully, but F., although

she epilated normally, complained of pain in the knees on the twelfth day after the dose. By the sixteenth day the lower extremities were swollen, hot, and tender, with fluid in both knee-joints. A fit, followed by unconsciousness for two hours, occurred on the eighteenth day, and was succeeded by choreiform movements, with a temperature of 101° F. and acetonuria. A slow recovery was made in about one month. There was no history of epilepsy.

Fuld [11] reported a case in a boy of 12 who was given 8 mg. per kg. and who became ill two days later with pains in the lower extremities. No fit occurred, but he was in acute pain, lying in bed screaming, for some days. The acute illness lasted five or six weeks. During this time he suffered from diarrhœa, and four months later he was quickly tired, had a poor appetite, was easily agitated, and suffered from diarrhœa.

Bachkevitch and Prokoptchouck [12] reported a case of a man of 20 who received 8 mg. per kg. for favus. He was healthy, except for a slight enlargement of the thyroid. Albuminuria occurred on the same day, and by the third day he was ill with a temperature, rigors, difficulty in swallowing, and swollen and infected tonsils. He improved, and epilation commenced on the eleventh day. Fifteen days later he had a fit, and was excited, restless, and delirious; he bit his tongue. He developed a petechial eruption on face and neck. Owing to his excited state and to the development of hallucinations and delusions of persecution he was transferred to a mental clinic, but eventually made a complete recovery.

A somewhat similar case is reported by Peter, where a second dose was given because epilation after the first was not successful. Ritter and Karrenberg [13] report two cases where 8 mg. per kg. was given to two boys aged 6 and 5 years. About a week after the dose the whole mentality of the younger changed from that of a bright and happy child to that of a dull and tired child, and 15 days after the dose he developed a toxic rash with irritation. The hair subsequently grew very patchily and slowly. The elder brother's mentality changed in the same way and he had, in addition, a great deal of pain in the head. Epilation was never complete. One of us (J. M. S. S.) has heard of a similar case in this country.

Sir William Willcox has kindly supplied us with the following cases in which the epilating doses were repeated through a misunderstanding.

1. Two full epilating doses of thallium acetate were given at a week's interval to a child of 5 years. This was followed by nausea, collapse, and loss of consciousness for some hours. The child was subsequently ill with symptoms of peripheral neuritis, but eventually recovered.

2. Three full epilating doses were given at weekly intervals. Vomiting occurred after the third. The child was paralysed, but after some months recovered.

3. A child, aged 8, received two full epilating doses, but after some nausea and drowsiness recovered in 48 hours. As recovery was good a third dose was given. After the third dose drowsiness and coma developed. The patient remained in this state for several weeks and there was definite evidence of organic change in the basal nuclei. Nystagmus and squint and a double extensor response were present. The state of coma vigil persisted for some weeks, with low muttering delirium and incontinence of urine and fæces. The child improved but was found to be suffering from blindness and marked mental affection, but is, however, stated to be slowly improving.

FATAL CASES.

Accidental overdose has occurred on several occasions, and Buschke and Langer report a similar mistake to that in our series; the child received ten times the normal dose, and died in 24 hours. The most serious cases occurred in an orphanage in Granada. Here a large number of the children were affected with ringworm, and a dermatologist, having confirmed the diagnosis, decided to use thallium. Having no previous experience of the drug, he made the mistake of giving it to 16 of the older children of ages 7–14. This mistake, although likely to produce toxic symptoms, would not be expected to produce fatal results. They had the usual dose of 8 mg. per kg., and the drug was dispensed correctly, but the scales on which the children were weighed were afterwards stated to be inexact (to what extent is not stated). After three days the first child became ill and died the same night, and eventually 13 out of the 16 died, and at the time the account was written the remaining three were not expected to live. Although no details are available it seems likely that an excessive dose was given, but not one greatly in excess of the epilating dose, for many of the patients lived for about three weeks, whereas a large excess of the epilating dose kills in 24–30 hours.

Merkel [14] has described three fatal cases in which the children did not even receive their full epilating dose. The first case, 12 years old, was due to receive 0·336 g. (8·0 mg. per kg.), but actually received 0·033 g. every day for seven days—i.e., 0·233 g. On the seventh day he was taken ill with muscle pains, and he died six days later. The second case, 10 years old, was due to receive 0·196 g. (8·0 mg. per kg.), but received 0·03 g. daily for five days—i.e., 0·15 g. On the fifth day he was taken ill, and he died ten days later. The third case, aged 11 years, who had suffered from encephalitis, was due to receive 0·296 g., and actually received 0·2 g., taking 0·1 g. the first day and 0·033 g. on the three subsequent days. He was taken ill and died 14 days later. The post-mortem examinations on the three cases were described fully, but the only positive findings were extreme cachexia and lack of fat in all organs.

Accidental poisoning by thallium has occurred, and was not diagnosed until late in the illness. Ramond [15] reports that a young girl was taken ill suddenly with symptoms suggesting an acute abdomen, but no operation was performed. She became worse, with increasing abdominal pain and paralysis of the lower limbs; about a month later epilation gave the clue to the condition. For three months before the illness she had been in the habit of using on her face a cream for superfluous hairs which contained 2·5 per cent. thallium. Six months later she was still paralysed and the hair had not regrown. It is probable that sufficient of the cream had been swallowed to produce the symptoms.

Zelio-corn and zelio-paste containing 2·1 to 2·8 per cent. thallium are used fairly extensively as rat poisons in Germany, and have been responsible not only for accidental but also for a number of criminal cases. Greving and Gagel [16] record a case of a woman who attempted suicide by spreading about half a tube of the paste on bread and swallowing it. She was taken ill two days later with great pain and albuminuria. Epilation occurred on the twelfth day. The patient was ill for months with severe peripheral neuritis, tachycardia, pains in the chest, emaciation, achlorhydria, and amenorrhœa.

Haberda records two cases of murder by zelio-paste: the murder of a husband by his wife, and the murder of an infant by its mother. In the latter case an exhumation was made, and hyperæmia of the brain and fatty degeneration of the heart, kidneys, and liver were found. Kaps reports a case of murder in which the victim was given three tubes of zelio-paste in repeated doses. He became blind and died a few days later, the total amount of thallium given being about 2·25 g. Heuck and von Zumbusch have,

as a result of their considered experience, decided to abandon the use of thallium acetate.

Chronic industrial poisoning by thallium has been investigated by Buschke.[17 18] In a chemical works where thallium was isolated from pyrites residues the manager and five workmen fell ill after a few weeks' work, complaining of fatigue, loss of appetite, pains in the knees, and epilation. In all cases there was a marked eosinophilia and lymphocytosis. All improved on being removed from exposure to thallium, and in only one case did eye symptoms develop. (Details are not given, except that he was left with a posterior synechia of the iris.) In another factory employing six men, one man, after working for three months with thallium, showed double optic atrophy with loss of sight, eosinophilia, loss of knee-jerks, and lymphocytosis. Four men, after working two or three months, had albuminuria which, in spite of removal from exposure to thallium, remained chronic in two. These men also suffered from pains in the limbs and loss of hair. A third factory, where contact with thallium was only occasional, had no cases of poisoning, but some of the workers showed eosinophilia.

Conclusions.

As a result of these reports we are of the opinion that thallium acetate should not be used as an ordinary routine treatment for ringworm of the scalp. We have based this opinion on the following conclusions:—

1. Thallium in itself is a highly toxic substance showing a marked similarity to lead, both in its chemistry and in its toxic symptoms, and the far-reaching effects of the poison are much greater than is generally supposed.

2. It has a definitely selective action on all forms of nervous tissue, and it has been demonstrated that, even in infinitesimal doses, it causes slight degenerative changes in the brain cells of rats. It is therefore most unlikely to leave the human brain entirely unchanged, and it seems impossibe to be certain that it does not hinder further brain development.

3. The margin between an epilating and a toxic dose is extremely small and allows for no idiosyncrasies, whereas with X rays the dosage is very accurate, trouble is rare, and if a mishap occurs it is at least local.

4. Ringworm of the scalp is not in itself a fatal disease and, though often troublesome, can usually be cured by other means. It therefore does not seem justifiable to use such a powerful poison in an attempt to cure it a little more quickly.

5. It is quite easy to obtain thallium salts in a state of purity, and there is no especial reason why a solution which has been kept for some time should not be used. We do not believe that toxic phenomena were ever due to the use of an old solution.

Our thanks are due to Dr. W. Knowsley Sibley for permission to publish the three cases on which this article is based.

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EXPERIMENTAL INDUCTION OF TUMOURS

WITH BLAST-FURNACE TAR.

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The present experiments are the outcome of some investigations which were originally undertaken to discover the reason for the failure of certain tars to induce tumours.

The prevalent view concerning the carcinogenic action of tars is that those which are capable of inducing cancer contain certain "specific carcinogenic principles" and, conversely, that those tars which are ineffective are deficient in such principles. In a previous communication [1] an alternative explanation was suggested. It was found that an actively carcinogenic gas-tar could be almost completely prevented from inducing tumours by the addition of 0·1 per cent. dichloroethyl sulphide (mustard gas) to the tar, and that the inhibition was due to some action of the mustard gas on the animal, and not to any alteration of the constituents of the tar itself. These results suggested that the presence in certain tars of substances with an inhibitory action similar to that of mustard gas might be responsible for the failure of such tars to induce tumours. In other words, a particular tar might appear to be non-carcinogenic not because it lacked those constituents which were responsible for the induction of tumours, but because the carcinogenic action of those constituents was masked by the additional presence of inhibitory substances.

In the present investigations it was proposed to test this hypothesis, using an extract of a blast-furnace tar as an example of a non-carcinogenic tar. The experiment proved unsuccessful, because this extract of blast-furnace tar, which was assumed to be non-carcinogenic, actually produced tumours when applied to the skin of mice. Up to the present blast-furnace tar has always been considered to be entirely lacking in the power of initiating tumour growth, this view being based on both clinical and experimental evidence. Although epitheliomatous lesions of the skin are not uncommon among the workmen in the gas-tar industry, no such lesions have been observed among those who come into daily contact with blast-furnace tar (Legge [2]). There is no record at the Home Office of a case of epithelio matous ulceration from blast-furnace tar, although 520 (with 79 deaths) have been reported from pitch and tar in the ten years 1920–29, and the total from pitch, tar, paraffin, and oil during the same years was 1151, with 296 deaths (Bridge [3]).

In 1923 Leitch [4] tried the effect of a Scottish blast-furnace tar on the skin of mice and, although the treatment was continued for eight months, he failed to induce a single tumour. Kennaway,[5] studying the

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carcinogenic action of different tars and tar fractions in great detail, also maintained that blast-furnace tar was free from carcinogenic action. Though emphasising the differences between the mode of production and chemical composition of gas-tar and blast-furnace tar, he concludes that "it is uncertain whether the inability of blast-furnace tar to produce cancer is due to the nature of the coal, to the temperature of carbonisation or to some reaction which is dependent upon the peculiar chemical conditions in a blast-furnace." In the most recent communication dealing with the subject, Kennaway and Hieger [6] state once again that blast-furnace tar is not carcinogenic, but they do not mention whether this statement is based on Leitch's original experiment or whether it is an outcome of similar experiments performed subsequently by themselves.

FIGS. 1 2 3 4

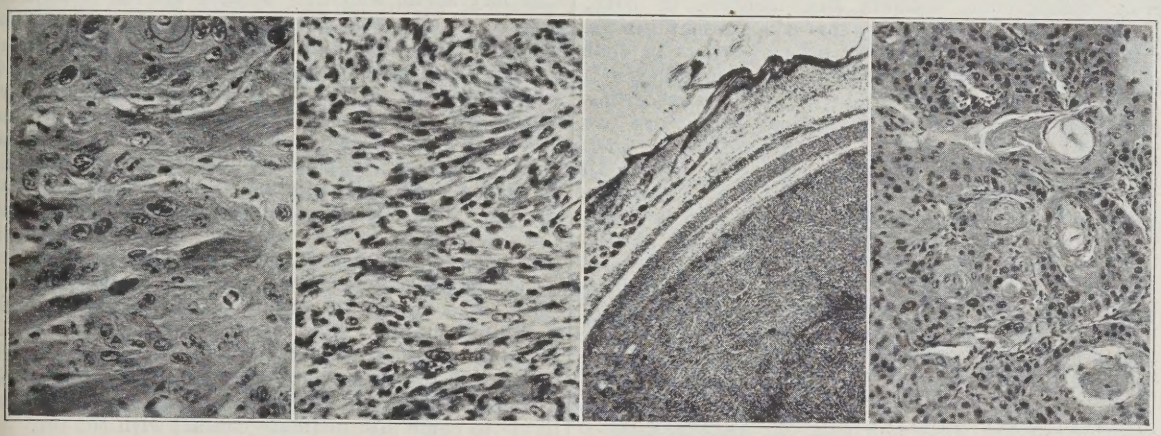

FIG. 1.—Mouse 74M5, painted with an ether extract of blast-furnace tar for 30 weeks. A squamous carcinoma, showing invasion of muscle. (× 220.)

FIG. 2.—Mouse 87Ma, painted once a week with the untreated blast-furnace tar for 18 weeks. A spindle-cell sarcoma. (× 225.)

FIG. 3.—A low-power view of the same tumour (Fig. 2), showing muscle between the tumour and the skin. (× 27·5.)

FIG. 4.—Mouse 91M3, painted twice a week with the untreated blast-furnace tar for 35 weeks. A squamous carcinoma. (× 115.)

Tumours Produced by the Tar.

In view of all this evidence in support of the contention that blast-furnace tar is non-carcinogenic, the discovery that an extract of such a tar could lead to the development of tumours in mice called for a more searching inquiry into the problem. Consequently, I decided to follow up this original observation, leaving aside the wider problem which I at first set out to investigate.

In the original experiment, 45 mice received weekly applications of an ether extract of a Scottish blast-furnace tar, which was prepared in the following manner. A simple ether extract of the tar was dried and treated with lime. This mixture was extracted once again with ether, the ether was evaporated, and the residue was employed for application to the skin. This ether extract was applied to a small area of skin in the dorsal region, the hair covering that area being cut short with a pair of curved scissors before each application, thus obviating the use of a chemical depilator.

Warts began to develop from the twentieth week of tarring, and, by the forty-fourth week all the surviving animals had acquired tumours. Altogether, out of the 45 mice which were originally subjected to the tarring, 25 developed tumours. On histological examination, seven of these tumours were found to be malignant. A photomicrograph of one of these is shown in Fig. 1.

The fact that an ether extract of the tar, after preliminary treatment with lime, was used in this experiment precluded me from declaring that the original tar itself was carcinogenic. It was possible that the chemical treatment might have been responsible for this action. It was necessary, therefore, to repeat the test, using the original untreated tar instead of the ether extract. This was carried out in the following experiments.

Fifty mice received weekly applications of the untreated tar, the procedure being otherwise the same as in the previous experiment. Unfortunately, the mortality was very high, but, in spite of that, five of the animals developed tumours. Four of these tumours were simple warts and the fifth was a spindle-cell sarcoma which developed under the treated area of skin, beneath the panniculus carnosus (Figs. 2 and 3). The last experiment was repeated, this time using 100 mice and applying the untreated tar twice a week. After 38 weeks 21 mice had acquired tumours. Nineteen of these tumours remained simple warts, whereas two developed into squamous carcinomata (Fig. 4).

—	Ether extract of blast-furnace tar.	Untreated blast-furnace tar.		Ether extract of gas-tar.
	A.	A.	B.	A.
Animals used ..	45	50	100	60
Duration of expt...	44 weeks.	32 weeks.	38 weeks.	30 weeks.
First appearance of a tumour ..	20 ,,	15 ,,	16½ ,,	11 ,,
Survivors bearing tumours—				
50 per cent. ..	35 ,,	—	38 ,,	20½ ,,
100 ,, ..	44 ,,	—	—	30 ,,
Total of animals with tumours ..	25	5	21	31
Animals in which tumours became malignant ..	7	1	2	6

A. = once a week; B. = twice a week.

The results of all three experiments are given in the accompanying Table, together with some results of a similar experiment with a known carcinogenic gas-tar.

The only conclusion is that the sample of blast-furnace tar used in these experiments, though not

as potent as gas-tar, is definitely capable of inducing tumours in mice. The discrepancy between these results and those obtained by previous workers suggested at first that the tar used in the above experiments was not a true sample of blast-furnace tar. It was, therefore, decided to obtain more accurate information about the tar as regards both the method of its production and its chemical composition.

Source of the Tar.

The blast-furnace tar was obtained from an iron works in Scotland. It was made from a battery of furnaces which were employing a mixture of approximately 88 per cent. splint coal and 12 per cent. coke. It has been frequently stated in the literature that Scottish blast-furnace tar is produced from splint coal, without any mention of coke. It would appear, therefore, that the present sample differed from those used by other workers in that coke was added to the splint coal in its manufacture. However, after consulting different authorities, including several ironworks where such tars are produced, it appears that the addition of a small percentage of coke to the splint coal is the rule in all Scottish blast-furnaces, and that this has been the practice for at least the last 20 years. To satisfy myself still further that the tar used in my experiments was an authentic example of blast-furnace tar, it was submitted to fractional distillation by Mr. H. D. Briggs, of the Yorkshire Tar Distillers, Ltd. The result of the analysis was as follows: 52 per cent. water, 6 per cent. naphtha, 20 per cent. light and heavy oils, 22 per cent. pitch. The report concluded with the statement: "This sample seems a true blast-furnace tar, but there is a large quantity of water." The presence of an excess of water (of which a certain amount is always present in blast-furnace tar) could not be held responsible for the carcinogenic action. It is therefore possible to induce tumours in mice with a genuine sample of blast-furnace tar, and, furthermore, blast-furnace tars in general can no longer be regarded as non-carcinogenic, though admittedly other samples may be inactive.

The fact that gas-tar and blast-furnace tar are both carcinogenic, despite the differences in their chemical composition, the nature of the fuel used in their production, the temperature of carbonisation, and the conditions of the respective distilling plants, must be considered of some significance, particularly in relation to the controversy on the "specificity of carcinogenic agents."

These results may also be of interest from the industrial aspect. So far no case of skin cancer arising from contact with blast-furnace tar has ever been reported. The workmen in the ironworks from which the present tar was obtained have been examined by a medical inspector of factories, and no case of epitheliomatous ulceration was discovered. It is possible that blast-furnace tar, though sufficiently potent to induce tumours in mice, may not be capable of having any effect on man. Even if it be assumed that any agent which is carcinogenic for mice must also be carcinogenic for man, it would still not be justifiable to presume that, because mice are susceptible to blast-furnace tar, therefore the workmen who handle that tar should necessarily develop cancer of the skin. It is possible that the workmen do not handle the tar sufficiently frequently or for a sufficient length of time for the condition to develop, particularly as blast-furnace tar appears to be less potent than gas-tar. At the same time, it must be realised that the regulations dealing with the necessary hygienic measures and medical inspection are by no means as strict for blast-furnace tar workers as they are for those who come into contact with gas-tar, pitch, paraffin, and oils. Therefore it is not unreasonable to imagine that, as a result of more careful medical supervision, cases of cancer due to blast-furnace tar might yet be found in those industries in which workmen are liable to come into intimate contact with the tar.

The tar extracts have been prepared in the biochemical laboratory of this department under the direction of Dr. H. J. Channon, to whom I am greatly indebted. I should also like to express my thanks to Mr. H. D. Briggs for the chemical analysis of the blast-furnace tar.

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CLINICAL AND LABORATORY NOTES

HÆMATEMESIS AS A SYMPTOM OF GASTRIC OR DUODENAL ULCER.

BY BASIL HUGHES, D.S.O., M.B. CAMB., B.SC. LOND., F.R.C.S. ENG.,
SURGEON TO BRADFORD MUNICIPAL GENERAL HOSPITAL; HON. SURGEON TO BRADFORD CHILDREN'S HOSPITAL; HON. ASSISTANT SURGEON TO BRADFORD ROYAL INFIRMARY.

SOME 20 odd years ago I was asked to see a man, 42 years of age, who was suffering from profuse hæmatemesis. He gave a very vague and unsatisfactory history of indigestion which did not fit in with the classical symptoms of either gastric or duodenal ulcer and unfortunately I was persuaded to operate upon him. I found no evidence whatever of gastric or duodenal ulcer and so the surgical history of this case finishes. This man is alive to-day and has had several gastric hæmorrhages since. Curiously enough, within the last year I was called to see his brother, who had suffered a severe hæmatemesis. He also had suffered from indigestion, which took the form of a discomfort only after meals. Examination revealed an enlarged spleen and a blood examination confirmed one of the primary anæmias. The day after the blood examination he sustained a fatal hæmatemesis.

During the last twelve years I have operated upon five cases for severe hæmatemesis and in only two of these cases was operation justifiable, for in three of them, despite the classical symptoms of duodenal ulcer, no ulcer existed, but the liver showed cirrhotic changes. In the other two cases there was a crater-like ulcer on the posterior wall of the stomach which was fixed firmly to the pancreas. Partial resection of the stomach was performed, but there was no evidence that hæmorrhage had occurred from the ulcer. It had taken place from numerous points in the inflamed tissues surrounding the ulcer, and again the liver was cirrhotic.

In nearly 25 years' experience I can only recall two cases of true hæmorrhage from an ulcer. Both patients died before surgical aid could be of avail, and post-mortem examination showed an erosion of the splenic artery. So far these findings fit in tolerably well with continental findings. I have encountered

in consultation, as one is bound to do, many cases of hæmatemesis in which the history and symptoms cannot satisfactorily be correlated with gastric or duodenal ulcer and which, in the quiescent periods, are negatived both by fractional meal and radiological findings.

Such experience shakes one's faith in hæmatemesis as a trustworthy symptom of gastric or duodenal ulcer, yet text-books still proclaim it and students are still taught it. If it is a symptom, it is a very rare symptom; such are my surgical and post-mortem findings. My own experience leads me to believe that hæmatemesis is a symptom that calls for the physician, for it has proved far more often the symptom of a medical rather than a surgical ailment. A surgeon friend of mine told me that he had operated upon a patient with hæmatemesis. He found a cicatrix at the pylorus and performed a gastro-enterostomy. An uncontrollable hæmatemesis followed and there was hæmorrhage from the operation wound. The patient died. There was no blood examination, but I feel sure this was a physician's case. Such conditions as hepatic cirrhosis, primary anæmias (insidious as they are), purpura (gastric epistaxis was not unknown in the near East during the recent war when purpura was prevalent), and other blood conditions must be excluded before a surgeon is asked to interfere.

A wise surgeon will always take a competent physician into his confidence before he operates upon a case of hæmatemesis.

A CASE OF SEVERE LEAD POISONING FROM DRINKING WATER.

By Norman Lorraine, M.D., D.P.H., F.R.S. Edin.,
MEDICAL OFFICER OF HEALTH, BENFLEET.

There appears to be no doubt that the following ase was one of severe chronic lead poisoning, due to lrinking water derived from a well which contained dangerous amount of lead.

The patient, a childless married woman aged 33, came to ve in the district in February, 1927, occupying a new ouse. Seven months later she had a three months' mis-arriage and felt out of sorts. In June, 1928, she was perated on in London for cystic ovaries, both being involved. n September, 1928, she went to Cumberland for six weeks nd felt much improved. Returning home, she again felt out of orts and decided to go to Cumberland for some length of me. By this time she had swelling of the arms, legs, and ngers, was losing weight considerably, and was suffering om anæmia to such an extent that for about seven weeks ie was confined to her bed and bedroom, but definitely nproved during her stay in the north.

In March, 1929, she returned home and very soon after-ards began to feel ill, being admitted to a local hospital July, 1929, suffering from loss of use of fingers and hands, id a certain degree of loss of use in legs and feet, extreme næmia, amenorrhœa, and marked loss of weight. She mained in hospital for about thirteen weeks. The impair-ent in use of fingers came on gradually about June, 1929, ginning with the little fingers of both hands, the right ing more involved than the left. The feeling of numbness read from the little finger to the other fingers of both nds. On her discharge from hospital she returned to her use and became more anæmic, emaciated, and undoubtedly riously ill. She was a lemon-yellow colour and suffered m severe constipation, colicky pains in the abdomen, a ling of sickness, and wrist-drop in both arms.

She was admitted to a London hospital at the end of ril, 1930. On her admission she was found to have nctate-basophilia. At the beginning of June, 1930, lead s definitely present in her urine, but her power of extension the wrist showed no improvement, although her general alth certainly became better. She still has dropped wrists d is very anæmic and constipated; her weight has pped from 9 st. 10 lb. to 6 st. 3 lb., and she complains tingling of the fingers, her hands showing trophic changes d flaccidity.

NATURE OF WATER-SUPPLY.

The domestic water-supply which, in my opinion, is responsible for her condition has its source in a surface well. The lead contained therein appears to be due to a plumbosolvent action of this water on the pipe system, which is lead.

An analysis of a sample of this water reports: "This is an exceedingly hard acid water containing a very excessive and dangerous amount of lead, practically all of which is in solution. Organically and bacteriologically the water is of a satisfactory degree of purity, but the amount of lead present is such as to render the water unsafe and unfit for drinking and domestic purposes."

I am indebted to Mr. E. C. Bilham, chief engineer to Southend Waterworks Company, for the following note: "The water referred to is drawn from shallow wells sunk in the sand and gravel—glacial deposits of the pleistocene period. The soluble salts in water drawn from these deposits vary greatly in different localities, and as these recent deposits include nearly all cultivated land, the water they absorb is markedly affected by manures and subject to surface pollutions; in addition, they are frequently very hard. These waters not infrequently act vigorously on lead, especially if they contain much carbon dioxide in solution. The presence, however, of silica as an alkaline silicate retards the action, and if the silica present approaches 1 part per 100,000 action is either entirely prevented or only occurs to a sufficient extent to coat the lead with a practically insoluble silicate which prevents any further oxidation and consequent danger from lead poisoning. The suitability for domestic purposes of water drawn from surface wells should always be regarded with suspicion until both chemical and bacteriological examination has shown the supply to be pure and wholesome."

I would refer those interested in the public health law aspects to Sects. 62 and 70 of the Public Health Act, 1875, and the Public Health Water Act, 1878, Sect. 3.

I should like to take this opportunity of thanking Dr. J. E. Jameson for the assistance he has given me in the investigation of this case.

ABDOMINAL TORSION OF OMENTUM.

By Douglas Robb, M.D. N.Z., F.R.C.S. Eng.,
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The paper by Mr. M. J. Smyth in The Lancet of Sept. 13th prompts me to record this case, which closely resembles several of his cases, and which falls into his class of pure intra-abdominal torsion of omentum.

A woman, aged 50, was admitted to Auckland Hospital on May 1st, 1930, complaining of abdominal pain of four days' duration. The pain was on the right side, and stabbing in character. It had been intermittent but became continuous and more severe six hours before admission. She had anorexia, but no vomiting. Her bowels were regular, and she did not suffer from dyspepsia. She had had a severe attack of right-sided abdominal pain with diarrhœa and vomiting one month before. She had borne three children.

Examination.—Temp. 97·6° F., pulse-rate 100, respirations 18. A stout woman in some distress. Tongue coated. Nothing abnormal was found in the chest. The abdomen was generally tender, but the maximum tenderness was found in the right iliac fossa and just above it. No definite rigidity could be made out. No mass was felt. A diagnosis of acute appendicitis was made, and immediate operation carried out.

Operation.—Under general anæsthesia the abdomen was opened by a median pararectal incision below the umbilicus. A little blood-stained fluid escaped on opening the peritoneum. The appendix was found to be normal. On further exploration a purplish irregular mass of omentum, half the size of a closed fist, was found arising from the transverse colon near the hepatic flexure. It had become twisted 540 degrees in a clockwise direction on its pedicle. It was not adherent to any other structure. The twist was undone, the pedicle transfixed and ligated, and the mass removed. The abdomen was closed as usual.

Progress was uneventful until the fourteenth day when the patient reported a sudden sharp pain in the right side of the chest. The temperature reached 99° on the next two days. The trouble soon subsided, and she was discharged well on the twenty-fourth day. The pain was attributed to a small pulmonary embolism.

I am indebted to Mr. Kenneth MacCormick for permission to publish these notes.

CENTRAL ASSOCIATION FOR MENTAL WELFARE.

CONFERENCE IN LONDON.

A CONFERENCE organised by the Central Association for Mental Welfare was opened on Dec. 11th by the Minister of Health. The chair was taken by Sir LESLIE SCOTT, and the subject of discussion was developments in mental health work under the new Act. At a luncheon held in the Hotel Russell Mr. L. G. Brock, chairman of the Board of Control, was the guest of honour; he also took the chair at the afternoon session, when there was a discussion on

Social Services and Mental Hospitals.

The CHAIRMAN said that the social worker might be looked upon as the expert assistant of the psychiatrist or as the friend of the patient; although the two rôles were not necessarily incompatible, views on the training required would depend on which rôle was under consideration. He thought it possible to overemphasise the necessity for prolonged training; it was essential to get the right type of worker, one on whom the patient would look as a friend. From the patient's point of view the untrained voluntary worker might be more acceptable than the professional. Efficiency was less vital than sympathy. There was a wide scope for this type of worker inside the mental hospital. The Board of Control had no wish to see any uniform organisation rigidly enforced all over the country; the scheme must be adapted to local conditions.

Dr. THOMAS BEATON said that the central point of the social service would be the clinic, and that the mental hospital was but one of its side issues. In mental or nervous disorder the whole life situation of the patient was most closely bound up with the illness, and a survey of the life and environment of the patient was an essential part of the history, as a change in environment was often an essential part of treatment. The clinic must be run as a public utility service; it was not merely a medical matter, but dealt with every kind of sociological problem. No doctor could undertake the work without social assistance. The whole scheme should be under the supervision of the superintendent of the mental hospital, and comprehensive records should be kept. A close liaison must be maintained with the probation service, the school medical service, child welfare centres, and other social services. A hundred and one details needed attention, and the only satisfactory source of the necessary help was either a specific department under the local authority or else the mental welfare association. The Mental Treatment Act and the Mental Deficiency Acts must essentially be worked together. In time the mental health service would become one of the most important factors in the well-being of the community. The best training for the voluntary worker was a practical one. The ideal worker would know nothing whatever of psychology; she would sit in the clinic and listen, her business being to note facts and not to express an opinion. No matter how difficult the problem, something had to be done to help the patient.

The Training of the Social Worker.

Miss ST. CLAIR TOWNSEND discussed the types of patient likely to benefit by social service: unstable children and adolescents and adult cases of "breakdown"; patients in mental hospitals or observation wards; and those discharged or on licence. The worker should be experienced in general social work and have had a specialised training in child guidance mental deficiency, and work for adults. There was now a year's post-graduate course at the London School of Economics. It was most important that after-care should be in the hands of the same worker as had become a friend of both patient and relatives while the former was in hospital. Although the requisite attributes of character sounded ideal—tact balance, patience, humour, and receptiveness—all of them, save perhaps humour, could be acquired through training and experience. Without training the most gifted person could not be the right kind of worker. In America they felt that the use of untrained workers had been harmful to the work. Any scheme evolved should be unitary and elastic and should ensure continuity.

Dr. G. W. JAMES described the history and work of the Mental After-care Association, and illustrated the imperative need for skilled guidance on discharge from mental hospitals, and the invaluable prophylactic help afforded by the Association in out-patient departments. After-care and pre-care work of this kind was of the utmost value. He agreed with Miss Townsend that a certain amount of training was essential; women did the work very much better than men. The worker should spend some months in the almoner's department of a general hospital, should be familiar with mental hospitals of every type, and with child guidance, and should have experience of some sort of general social work, such as the Charity Organisation Society. He agreed with Dr. Beaton in praying that the social worker be delivered from a knowledge of psychology. It was more important for a home visitor to know the names of the children than the name of some complex that might afflict the mother.

Dr. A. A. W. PETRIE urged the importance of a unified service including both normal—as in child guidance and the problem of the social inefficient—and abnormal. The problem extended from the mild neurotic to the psychotic for whom institutional care was inevitable, and in every grade the psychiatrist needed the help of the social worker, on whom the success of the out-patient department largely depended. He thought the general sense of the doctor and other workers could be trusted to deal with or get rid of the person who dabbled in psychology. He stressed the importance of personal contact between social worker and medical staff. By the prevention of mental disorder the social service would stand or fall, and in intelligent prevention lay the hope of advance in mental hygiene.

Dr. LETITIA FAIRFIELD said she had been bewildered to hear a distinction drawn between efficiency and sympathy, and had only understood it on hearing that women were better than men at the work. The male sex always thought women were using tact and sympathy and womanly charm when they were using sheer hard experience and training. The poor appreciated more than anyone the value of efficiency; no one was more cordially disliked in the homes of the poor than the merely sympathetic person. Associations that made a success of home visiting owed their success to the fact that their workers were willing to undergo hard practical training. This was an extremely difficult and highly technical job and must be learnt by anyone who was to be of any value either to doctor or patient. The individual who had been to a few popular lectures or read a few popular books on psychology was to be dreaded, but the training in psychology given at the London School of Economics course, for instance, was not to be

deprecated. The success of the Act would depend very largely on the social service. Without it the clinic was likely to be much more interesting for the doctor than useful for the patient.

A brief discussion followed.

On Friday morning the chair was taken by Mr. R. C. MORRISON, K.C., and Dr. E. O. LEWIS read a paper on

Ascertainment of Mental Defectives.

He said that ascertainment was looming large in the activities of local mental deficiency authorities at the present time. The numbers were so great that, even when the local authority had made adequate colony provision for the younger defectives, there would still be considerable need for accommodation in institutions for older defectives, and those in receipt of outdoor relief should be ascertained in order that they might attend occupation or handicraft centres. The defectives living in the general community presented considerable difficulty; the criteria for determining the kind of care they needed were hard to fix. It was no exaggeration to say that the retarded children were the most neglected group in the educational system. Cöoperation between the education officer and the school medical officer was essential, and the best person to make a survey was the educational psychologist. He thought that a survey to estimate the retarded children in a school population of 10,000 could be made in three or four months at a cost of about £400. The Wood report had estimated that there were nearly 9000 imbeciles attending day-schools, doing great harm both to themselves and to the system.

Mrs. HESTER ADRIAN read a paper on guardianship. Dr. Lewis's recent inquiry, she said, had estimated that about 80,000 defectives could be left in the community. These would not all need the same amount of care, control, or training. The four forms of community care available were voluntary supervision, statutory supervision, guardianship, and licence. Voluntary supervision, the most lax of the four, could be applied, Dr. Lewis had estimated, to rather more than half the cases. Statutory supervision was particularly suitable for low-grade cases in satisfactory homes who needed training. The chief difficulty in the way of guardianship was the stringency of the regulations, which alarmed parents and foster-parents; this might be overcome by making the local authority the statutory guardian, with a guardianship officer to select foster-parents and supervise them. Guardianship in this form would differ very little from licence and might be more popular. Suitable guardians could be found if carefully sought, and many difficulties could be overcome by unity of control and coöperation between all bodies concerned; a full-time guardianship officer should be appointed where possible.

A discussion followed.

On Friday afternoon the chair was taken by Sir BASIL BLACKETT, and Dr. LANGDON-DOWN spoke on the need for an inquiry into the

Causation and Prevention of Mental Deficiency.

He pointed out the drawbacks of a Government inquiry as a form of machinery for inquiring into this subject; it was a lengthy process and legislative measures followed it but slowly. He maintained that the Wood report showed that the problem of mental deficiency was thoroughly understood in its main aspects and justified cautious progress on the lines suggested. Everybody was agreed that it was undesirable for defectives to become parents, and the proposal made by those in favour of sterilisation was that it should be made lawful for medical practitioners to carry out sterilisation, with consent, under proper safeguards. This facility need not await a further inquiry, did not obviate such an inquiry, and might well lead to the provision of valuable evidence. It was an essential step before any further advance could be made. In the cases for which sterilisation was advocated, ordinary contraception methods were inapplicable. Both the Wood report and the last report of the Board of Control had spoken of sterilisation as advantageous in certain cases. Who was to say that the effect of cutting off at the source even a few families of defectives would produce no appreciable result in the long run? Surely the time had come to seek the power to use one of the admitted modes of stemming the "racial disaster" of mental deficiency. Proof of the results of sterilisation could only be obtained as the result of trial, and such trial could only be made when the procedure was sanctioned by law. Whereas sterilisation was a real preventive of procreation, the regulation of marriage and safeguarding were not. Sterilisation was not, of course, anything but a supplement to segregation; it would be particularly useful for higher-grade defectives and those sent home on long licence. Dr. Langdon-Down hoped that the facility would be granted without awaiting the outcome of another inquiry.

Dr. C. P. BLACKER supported the plea for sterilisation, and said that the whole problem touched upon delicate preconceived opinions. Any investigation would therefore have to be very thorough and its results absolutely above suspicion if unanimity were to be attained. It would therefore take a long time. If the prevention of feeble-mindedness were to be taken seriously some steps must be taken to limit the fertility of the "social problem" group—one-tenth of the population of the country. To this group segregation, regulation of marriage, and birth control were inapplicable; sterilisation was the only method. At present the group resorted to an enormous extent to abortions; the possible effect of abortifacient methods on the production of secondary amentia was worth consideration. The child was very likely to be affected by poisons, interference with blood-supply, or direct pressure. Sterilisation would thus be a measure of prevention for secondary as well as for primary amentia. The experience of birth control clinics suggested that numbers of the social problem group would avail themselves of sterilisation; at present it was extremely difficult, if not impossible, to obtain sterilisation for a patient who could not afford to pay, though easy for those who could. The last thing the Eugenics Society wanted to do was to plunge into legislation which would subsequently have to be withdrawn; it wanted to get the thing going on a very small scale to obtain some results to study.

ARGUMENTS AGAINST STERILISATION.

Dr. A. F. TREDGOLD argued the point of view of those who wanted a full and careful survey of the subject before anything was done. Mental deficiency, he said, would not be appreciably reduced in extent or cost by sterilisation; only a small proportion of defectives were produced by defective parents—about 5 per cent., he thought, but nobody knew, and knowledge on this point was the crux of the whole question. He protested against the way in which the public had been misled on this matter. A reduction of 5 per cent. might be better than nothing if it could be obtained without risk, but in the present

state of our knowledge the risks were too great. It was hard to select the case suitable for return to the community; there was a very real risk of promiscuity and spread of venereal disease among girls in villages and small communities if they were known to be sterile; it would be very difficult to frame regulations; there would be a danger, if sterilisation were legalised, that local authorities would attempt to use it to save the expense of institutional accommodation; legalisation of sterilisation might well delay rather than hasten the solution of the problem, for the general public would think it had been solved. Mental deficiency was the final manifestation of a pathological change in the germ plasm brought about by environmental influences, but the change did not always cause mental defect. We knew little about the factors responsible for the germinal change, and could not recognise carriers. If every defective and carrier could be eliminated to-day a new crop would soon appear.

Dr. F. C. SHRUBSALL pleaded for a thorough investigation into the proportion of the feeble-minded who could be said with certainty to be cases of secondary amentia. A full family history from the grandparents downwards would give a great deal of information about the methods of inheritance of deficiency. The standard of mental efficiency had risen with standards of living and custom; it was important not to label as deficient those who were only examples of a lower grade of culture. It was extremely difficult to get hold of a defective; the penalties on parents were seldom enforced. Confusing talk about sterilisation would only hinder the ascertainment officer in his work. The higher the grade of the defective the more difficult it would be to conduct a case if it became known that certification might convey a risk of subsequent sterilisation. He feared the effects of premature action. It would be no gain to the nation to sterilise 100 defectives a year and lose 200 or 300 who might have been segregated. It was essential to have public opinion behind any attempt at legislation. A commission or committee might ensure that opinion.

Dr. F. D. TURNER said that nothing whatever was known about the causation of mental deficiency. Genetic experiments on flies were not applicable to human beings. It seemed impossible that the hotch-potch of conditions known as mental deficiency could be due to a single cause. Some authorities held that hardly any mental defect was due to heredity, and in Denmark they had come to the conclusion that 80 per cent. was due to preventable causes. At his own institution Dr. Turner had found that only 2½ per cent. in each generation was due to direct inheritance. It was easy to blame heredity instead of doing what could be done to alter preventable causes. Fifty per cent. of amentia could probably be prevented with a little more public health knowledge. He agreed with Dr. Tredgold that any measure of sterilisation would only prevent the careful inquiry that the subject needed, and with Dr. Shrubsall that the Eugenics Society spoke with two voices. He admitted that a few defectives were detained in institutions only because of the fear of their having children, but it was less than 1 per cent. Cases came back from licence through sheer failure to get on in the world. He was convinced that a sterilised defective girl would find it almost impossible to be moral. Any measure of sterilisation would prove the thin end of the wedge. In America it was becoming merely a means of hitting anyone you did not like.

Dr. H. B. BRACKENBURY argued in favour of the appointment of a committee or commission. He did not regard such a body as a suitable implement for research, but thought it would do something which ought to be done: gather together information and set it forth in an authoritative manner. The latest knowledge on deficiency and heredity should be collated and set forth. The general public knew practically nothing, and even the interested intelligent section were largely speaking in the terms of ten years ago, so great had been the recent advance in this field. He put some questions which he would like the commission to answer. What was the common level of intelligence in the population to-day? Most people placed it too high, and on the answer to this question depended the definition of mental deficiency. How far was it true that the families of defective parents tended to be larger than the average? This was a legend that seemed to have little foundation. Did that proportion who could be trusted in the community behave themselves socially and sexually in as decent a manner as the rest of the population or not? On what lines could genetic experimentation take place? He no longer agreed with those who wanted to legalise sterilisation as a preliminary step.

Mrs. C. B. S. HODSON said that Punnett's figures on elimination of defect by sterilisation were based on a number of facts no longer accepted, and Fisher's corrections had shown that there would be a decreasing elimination, complete elimination being put off for hundreds of generations. Recent Continental figures and pedigrees showed that deficiency was of many kinds depending on many factors, but that certain of these factors were dominant, not recessive. This made the prospect of elimination much more hopeful.

Mrs. NEVILLE ROLFE did not think that venereal disease would be increased by sterilisation. In California it had not, because the social care had been continued. Sterilisation could never be an alternative to social care; it seemed to be assumed that the public in this country was too stupid to realise this, but she questioned whether we were so unintelligent. A great problem was the amount of defect propagated by high-grade classes not under social care.

Father J. B. BAGSHAWE said that the Catholic Church regarded the prevention of procreation as a grave sin, the guilt of which must be shared by everyone concerned in the operation. The Catholic body in the country would oppose the Bill by every means available. He was sure that the measure would defeat its own object.

Dr. BLACKER, in reply, emphasised again that the advocates of sterilisation did not regard it as a "solution"; the problem would never be solved. Much about human beings had been learned from animal experiments; Mendelian ratios, for instance, extended right through the animal and plant world. If two-thirds of the defective population were to live in the community, sterilisation might be a useful adjunct to social care.

PAYMENT OF A HOSPITAL STAFF.—In consequence of a request by the medical staff of the Malton, Norton, and District Hospital that they should be paid for their services, the monthly board has prepared rules which require that both subscribers and non-subscribers shall pay for medical attendance, except in proved necessitous circumstances. The request was made because patients who could afford to pay refused to do so, and took advantage of free treatment not intended for their benefit. A scale of charges is to be fixed in consultation with the medical staff, but the new arrangement is subject to the sanction of the annual meeting of subscribers.

REVIEWS AND NOTICES OF BOOKS

Modern Psychotherapy.

By EMANUEL MILLER, M.A. Camb., M.R.C.S. Eng., Honorary Psychopathologist, West End Hospital for Nervous Diseases; Psychiatrist, Child Guidance Clinic of the Jewish Health Organisation, London. London: Jonathan Cape. 1930. Pp. 131. 5*s*.

Dr. Miller has tackled an extremely difficult problem courageously and with a considerable measure of success. He surveys first the general principles of psychotherapy and of the chief methods used, including the three leading schools of analysis, hypnosis, suggestion, auto-suggestion, and persuasion. He manages to give a very fair account of each of them, despite the innumerable pitfalls that await the feet of anyone who tries to be eclectic in these matters. Freudians may, perhaps, feel that the importance of the pregenital or polymorphic stage of sexuality is somewhat lightly sketched and the followers of Adler—at any rate in this country—may complain that insufficient stress is laid on the principle of studying the individual as a whole, from every possible angle. A certain amount of bias on the philosophical side of Jung's teaching is inevitable, seeing that the Zürich school has written practically nothing about its practice. The suggestion, however, that the "pill" presented to the patient of Jung is any less bitter in practice than that offered to the patient of Freud, or that in practice the Jungian physician ever attempts to direct the patient's path from a "Pisgah height" will hardly be acceptable to members of this school. Any salvation that is to be of any use must inevitably be found by the patient himself, as Dr. Miller recognises in his criticism of the "short-cut" methods of hypnotism and suggestion.

The chapter on the application of psychotherapy inevitably leaves the reader with the feeling that a book on this subject for the general practitioner has yet to be written. Dr. Miller's guide-posts are undoubtedly useful, but they leave much unsaid. There is all the difference in the world between the position of the practitioner who has read this book and that of one who has read a corresponding book on, say, some recent development in surgical technique. In the latter case he is not only told the history and present position of the technique; he is—or can be—also told just how and how far he can apply it himself and what cases should be referred to a specialist. Perhaps it is impossible to perform this service for psychotherapy at the present time, and for two reasons. One is that many psychotherapists are too devotedly wedded to their own particular theory and method; the earlier part of this book shows that Dr. Miller at least is not one of these. The other is that British practitioners in general lack any elementary background on which an author could build. In many American medical schools students are taught psychology by lecture, and are required to make a character study of their own personality and emotional trends and a detailed investigation of one patient, apart from the usual out-patient and ward teaching in psychological medicine. On such a foundation can be built post-graduate instruction which will be really helpful. The practitioner of the future will, we trust, be taught how to anticipate and prevent just those conditions which Dr. Miller lists as suitable cases for psycho-therapeutic treatment. Meanwhile his book marks an important advance. He writes clearly and simply, and has compressed a great deal of information into a handy little volume which will be of interest to practitioners and psychotherapists alike.

Laboratory Medicine.

By DANIEL NICHOLSON, M.D., M.R.C.P., Assistant Professor of Pathology, University of Manitoba. London: Henry Kimpton. 1930. Pp. 433. 28*s*.

THIS book differs from most manuals on clinical pathology in that the author makes a real effort to explain the rationale of and therefore the indications for the various diagnostic procedures which he describes. To give a complete and reasoned explanation of all laboratory diagnostic procedures would require a bulky treatise covering most of the field of general medicine, medical bacteriology, and pathology. The author has used great skill to get as much information as he has into 433 pages; in fact so well has he succeeded that a danger arises that the reader may regard his book as containing all the pathology that he need know. The work is up to date and contains descriptions of many procedures which have not previously found their way into text-books. The use of the blood groups in the determination of non-paternity is described; simple rules are given for the estimation of the basal metabolism rate, and sections are devoted to the collection and use of human immune sera against poliomyelitis and measles. A useful section is that describing Terry's method for the rapid diagnosis of histological sections, which has hitherto only been available in this country in the columns of the *Journal of Pathology and Bacteriology*. In the section on blood transfusion the author perpetuates the old superstition that even when matching has been performed the determination of the group of donor and recipient is still necessary; his statement five cells per c.mm. constitutes even a high "normal" for cells in the cerebro-spinal fluid is misleading. On the whole, however, the information given is accurate and well set out, and the book can be commended to students, practitioners, and laboratory workers who wish to know the full scope of laboratory diagnostic measures at the present time.

The Hair.

By W. J. O'DONOVAN, O.B.E., M.D., M.R.C.P., Physician to the Skin Department and Lecturer on Dermatology at the London Hospital; Lecturer at the London School of Dermatology, St. John's Hospital. London: J. and A. Churchill. 1930. Pp. 218. 12*s*. 6*d*.

IN the preface to this book on trichology Dr. O'Donovan mentions the neglect which the subject has suffered at the hands of the medical profession, with the consequent rapid increase of unqualified persons who claim to give expert advice on it. His aim has been to present the current teaching of dermatologists with regard to the hair. Beginning with the arrangement and pigmentation of the hair, he passes on to discuss ectodermal defects, the development and replacement of fœtal hair, and the abnormalities of development which may arise at various stages. The fifth chapter is devoted to alopecia due to scarring, and the sixth to seborrhœa of the scalp with its complications and treatment; syphilitic alopecia is discussed at length in a separate

chapter, with a reference to possible mistakes in diagnosis. In a section on the public health aspect Dr. O'Donovan gives a list of simple rules for the hairdresser attending institutions which would, if followed, prevent the spread of infective conditions; he also quotes the regulations and recommendations for the conduct of hairdresser's saloons issued by the Corporation of London. The composition of hair dyes in general use is given, and the treatment of parasites of the scalp described; the eleventh chapter deals with trichorrhexis nodosa, and the next five chapters with various types of alopecia, including those produced experimentally by thallium, inoculation, and light treatment. Ringworm of the scalp, hypertrichosis, and pseudo-alopecia form the subjects of the last three chapters of the book. The illustrations are clear and well chosen.

Practical Prevenception.

By WILLIAM J. ROBINSON, Ph.D., M.D. Hoboken: American Biological Society. 1930. Pp. 170.

THIS book is written for the medical profession only, and is especially adapted for American readers. The author is well known as a publicist, and as one of the first to advocate that medical men should interest themselves in the practical aspects of birth control. His influence in shaping American thought on this question has been felt for many years, and this book is the fruit of his long practical experience. Unlike most workers in contraception, Dr. Robinson believes very little in the efficiency of occlusive pessaries. He considers that the most efficacious method is a jelly containing a spermaticide. "It makes little difference what antiseptic or acid is used in the jelly. . . . In my opinion, a jelly containing boric acid, chinosol, and lactic acid is the best." Prescriptions are given for different jellies and suppositories which should prove useful to those medical men who have not facilities for obtaining patented articles, or whose patients cannot afford to buy them. It is contrary to American law to send contraceptives by post. In the opinion of most observers, the value of a properly fitting pessary is greater than is conceded by Dr. Robinson. It would also seem that the violence of his condemnation of the Gräfenberg ring is hardly justified by the knowledge that is as yet available of this method. The Gräfenberg ring is still in the experimental stage, and may be shown to have a value in carefully selected cases.

Diagnostic et thérapeutique électro-radiologiques

des maladies du système nerveux.

By A. ZIMMERN, Professeur agrégé à la Faculté de Médecine de Paris; Directeur de l'Institut municipal d'Electro-Radiologie; and J.-A. CHAVANY, Chef de Clinique à la Faculté de Médecine de Paris, Médecin de l'Institut municipal d'Electro-Radiologie. Paris: Masson et Cie. 1930. Pp. 654. Fr.120.

WRITTEN primarily for the neurologist, Prof. Zimmern and Dr. Chavany have compiled an interesting book, the chief feature of which is the necessary collaboration between radiographer and electrotherapist in the diagnosis and treatment of diseases of the nervous system. The book is divided into four parts, the first dealing with electrodiagnosis in all its aspects. The second, devoted to radiographic diagnosis, is well illustrated and enters fully into the technique of the injection of gas into the peritoneum, and of the subarachnoid and epidural injection of lipiodol. The third part describes various methods of treatment, and in the fourth and far the longest portion the authors discuss in detail all the diseases of the nervous system, taking, in turn, their clinical aspect, electrodiagnosis, and choice of treatment. This portion is again fully illustrated by radiograms, some of which might have been dispensed with, and their place given to illustrations of the technique of the different treatments described. The authors make no extravagant claims for the various methods, but give a well-balanced and impartial consideration to each in turn.

Indian Journal of Medical Research.

THIS issue (Vol. XVIII., No. 1, July, 1930) contains 35 separate papers on very various subjects.—J. A. Sinton reports on various species of the genus Phlebotomus, including the female of *P. nicnic* Banks, 1919, and some new specimens from Africa.—A field method for estimating salinity of water in mosquito-breeding places is also described in conjunction with N. D. Kehar.—R. B. Lloyd and L. E. Napier record a series of interesting observations on the blood-meal of sandflies investigated by means of precipitin antisera. *P. argentipes* and *P. papatasii* fed almost exclusively on the blood of cattle and man, but when both were available the blood of cattle was preferred. Their observations provide little evidence in favour of the theory of kala-azar transmission by sandflies.—J. Taylor, S. D. S. Greval, and U. Thant consider the incidence of bacteriophage in bacillary dysentery and cholera and the effects of treatment with therapeutic phage. A parallel control series was used throughout. They conclude that bacteriophage is neither essential to recovery nor an effective therapeutic measure.—T. B. Menon discusses the intestinal findings in 800 autopsies in Madras; 60 per cent. showed chronic colitis or chronic diarrhœa, the lesions strongly resembling those of chronic dysentery.—L. Dunbar and E. D. Stephens have made an analysis of the types of dysentery of the Madras district. Bacillary outnumbers amœbic dysentery by about 5 to 1, while the commonest causal organism proved a bacillus of Flexner type.—L. Wills and S. N. Talpade continue their report on the pernicious anæmia of pregnancy. They suggest that relative deficiency in vitamins A and C, or some factor associated with this deficiency is of ætiological significance, and think the proportion of fat and vitamin B in the diet may play some part in determining the incidence of this disease in populations generally short of vitamins A and C.—B. M. Das Gupta writes on the differentiation of *Leishmania tropica* from the parasite of dermal leishmanoid; the former grew more rapidly, but true lateral outgrowths were not seen.—T. A. Hughes and K. S. Malik studied the glucose and lævulose-tolerance curves in hospital patients suffering from various diseases, excluding diabetes and other endocrine disturbances. The curves proved abnormal in almost all cases, the blood-sugar being high (i.e., above 120 mg. per cent.) in 52 out of 78 cases.—A microchemical method of detecting urease within tissue is described by P. N. Sen, while K. R. K. Iyengar and W. A. Beer record Part I. of their studies on the value of etherised sheep vaccine in the treatment of rabies.—Other papers include one on the pharmacological action of opium and narcotine in malaria by R. N. Chopra and R. Knowles, and one on the action of opium in diabetes by R. N. Chopra and J. P. Bose.—N. D. Kehar records the behaviour of cinchona alkaloids towards living cells.—The distribution of lathyrism in the United Provinces is dealt with by H. Scott, as well as feeding experiments on tonga ponies with botanically pure cultures of *Lathyrus sativus* and *Vicia sativa*.

THE LANCET.

LONDON: SATURDAY, DECEMBER 20, 1930.

THE EXPERIMENTAL INVESTIGATION OF CANCER.

THE ninth scientific report[1] of the Imperial Cancer Research Fund which has just been published contains 12 original contributions and four reprints. The fact that these papers have been collected in this form is an indication that special importance is attached to them. They certainly represent noteworthy contributions to the literature of cancer. For the first time papers dealing with the filtrable tumours of the fowl are included in this series of scientific reports, the attitude adopted by cancer researchers towards this type of malignant new growth having changed in recent years. The fact that these tumours can be transmitted by cell-free material, while the transmission of mammalian tumours has never been accomplished by material free from living cells, led many investigators to doubt the true neoplastic nature of the filtrable fowl tumours. Others regarded them as atypical manifestations of malignancy, the investigation of which had little bearing on the real problems of cancer. The work of GYE was the first attempt to formulate a conception in which the development of malignancy in the filtrable fowl tumours presented merely an exaggeration of the process underlying the development of malignancy in mammals. Although the experimental evidence which he brought forward in support of his views has not been accepted, his work has had the effect of establishing the fowl tumours as true malignant new growths. The fact that filtrable tumours exhibit greater variations among themselves than was at one time realised is becoming clear. In this report Dr. J. A. MURRAY, the director of the Fund, and Dr. A. M. BEGG give accounts of two types hitherto undescribed, an endothelioma and a fibrosarcoma. It is known that filtrable tumours of the fowl are transmitted by cell-free filtrates or by dried material, and there is a rapid transformation of the normal cells of the injected fowl into malignant cells—that is to say, in the injected fowl the tumour arises de novo. A detailed study of the early stages in the development of the endothelioma showed that the endothelial cells of the capillaries at the site of the injection undergo a transformation into malignant cells. This process is illustrated by numerous drawings and microphotographs, so that the actual sequence of events can be visualised. The fibrosarcoma described is also of interest, because this neoplasm seemed to undergo a change in its biological properties in the course of its propagation. It is an exceptionally slowly growing tumour, which was at first so hard that it could not be minced for the purpose of making an extract. After several transplantations by living cells it became softer and more cellular; when an extract was made and injected the same type of tumour was produced.

The view is gradually gaining ground that the key to the cancer problem may be found in the investigation of these tumours and of the difference in their biological behaviour from that of mammalian tumours. Dr. W. CRAMER contributes two papers on this question. He points out that all the filtrable fowl tumours hitherto studied are of mesoblastic origin, and that when their transmission is effected by the injection of cell-free material a connective tissue reaction is involved. A similar transmission of an epithelial tumour to be successful obviously demands more restricted conditions. Thus a carcinoma of the ovary could only be transmitted without the intervention of living cells, if the cell-free material was actually injected into the ovary. Since most attempts to transmit mammalian tumours with cell-free material have been carried out with *subcutaneous* injections of extracts of *epithelial* tumours the negative results obtained are not conclusive evidence against the existence of an agent. Only experiments with sarcomata could yield such evidence. Extracts of mouse and rat sarcomata have given negative results, but Dr. CRAMER points out that even the Rous tumours pass through a phase when they cannot be transmitted by extracts, indicating a temporary attenuation of the agent or virus, which is further emphasised by the unavoidable loss resulting from extraction and filtration. In order to exclude this possible fallacy, Dr. CRAMER has studied the transmission of transplantable mouse and rat tumours, the cells of which had been killed by a process of repeated freezing and thawing. He found that all carcinomata treated in this way gave uniformly negative results on inoculation, as was to be expected, while the inoculation of frozen and thawed sarcomata yielded a considerable number of new tumours. The possibility that these positive results may have been due to the survival of a few exceptionally resistant cells is discussed. Experiments with tissue cultures gave no evidence of the survival of cells after repeated freezing and thawing. Moreover, the transmissibility of frozen and thawed sarcoma material is more readily attenuated by incubation or even by washing with saline than would be expected if it depended on living cells. Although this possibility cannot be excluded, the experiments show that the dogma of the non-transmissibility of mammalian neoplasms without the intervention of living cells does not rest on as secure a basis as has hitherto been generally believed.

Another aspect of the ætiology of cancer is dealt with by Mr. H. G. CRABTREE, who has studied the carbohydrate metabolism of tumours by Warburg's manometric method. He finds that different tumours exhibit wide variations in their

[1] Ninth Scientific Report of the Imperial Cancer Research Fund. 39 plates. 1930. London: Taylor and Francis. 21s.

carbohydrate metabolism. One feature, however, is common to all—namely, the power to split glucose into lactic acid even when oxygen is present. The significance of this property will be understood if it is realised that this reaction does not require the intervention of oxygen and is exhibited by normal tissues only under anaerobic conditions, and then only to a limited extent. This property of aerobic glycolysis is not specific for malignant cells, as was at one time suggested by WARBURG, but is possessed by other pathological overgrowths, such as the cellular proliferations induced by viruses. Future observations on such non-malignant pathological overgrowths will have to be carried out before generalisations on the carbohydrate metabolism of malignant cells can be made. The theory which attributes malignant changes to an alteration in the nuclear constitution of the cell is dealt with by Dr. R. J. LUDFORD. This view was held by BOVERI, who developed this idea in a small pamphlet first issued in 1914 and republished after his death in an English translation in 1929 under the title "The Origin of Tumours." BOVERI'S view was that the cancer cell owed its peculiar properties to a defect in the chromosome constitution. Recent research has, indeed, shown that the cells of malignant new growths frequently show abnormal mitoses, including mitoses with an abnormal number of chromosomes, and Dr. LUDFORD supplies a number of striking examples of such abnormalities. But it is by no means clear whether these are the cause or the effect of the malignant proliferation. A further development of BOVERI'S view has been the suggestion, first made by BAUER in 1928, that an alteration in the genes rather than the chromosomes was responsible for the malignant change—that the cancer cell was in fact a mutation of the normal cell. In a most interesting article Dr. LUDFORD gives a full bibliography of the literature and reviews the whole subject, pointing out that perhaps the strongest objection to this view is the difficulty of explaining the filtrable tumours of the fowl on such a basis. In another contribution, beautifully illustrated, Dr. LUDFORD shows how a careful study of transplanted tumours, spontaneous tumours, and tar tumours has led him to the conclusion that, contrary to the view of ITCHIKAWA and of OERTEL, "malignant growths are devoid of any specific nervous organisation." The report contains also a number of papers by Dr. L. FOULDS, who describes a rare type of tumour in the mouse—an angio-endothelioma—and deals with certain aspects of the problem of immunity to transplanted tumours, which have a bearing on the attempts recently made to apply this phenomenon of immunity to the therapy of cancer. Dr. MURRAY and Dr. CRAMER each contribute a paper on the experimental carcinogenesis by tar.

This ninth scientific report is a production worthy of its predecessors, and gives fresh evidence of the wide interests and unprejudiced attitude of the workers of the Imperial Cancer Research Fund.

A FURTHER TEST OF THE SPAHLINGER VACCINE.

Sir FREDERICK MAURICE has sent us copies of documents communicated to representatives of the daily press at the Ritz Hotel, London, on Dec. 9th. A committee of which he is a member has been controlling a test for the immunisation of cattle against tuberculosis, and feels that the moment has arrived when the results of this test should be made known to the world. The medical signatories to the manifesto include Dr. T. DRUMMOND SHIELS, Under-Secretary for the Colonies, Sir BRUCE BRUCE PORTER, Sir THOMAS WATTS, and Dr. J. H. WILLIAMS, M.P. Their report begins with a recital of experimental work carried out at the laboratories and farm of Mr. HENRY SPAHLINGER at Carouge, near Geneva, of which a preliminary account was given on pp. 107–8 of "A Book of Facts," by Mr. R. G. LOVELL (1926). Then comes the protocol of a further test made in this country. Last December, we are told, 18 calves of various breeds at a Norfolk farm were vaccinated with a single dose of a simplified bovine vaccine provided by Mr. HENRY SPAHLINGER, and said to be prepared from dead germs although not more nearly described. The injections varied in quantity from a mere trace to large doses. In July, that is six months later, all the vaccinated calves were injected with massive doses of living bovine tubercle bacilli, and all except one of the calves were alive and in good health on Nov. 23rd, that is, 19 weeks later. The calf which died on Nov. 7th had received the smallest dose of vaccine, no more than 0·05 c.cm. Four other calves injected in July with the same massive doses of living bovine tubercle bacilli, but not previously vaccinated, all died within eight weeks, the cause of death in each case being certified as tuberculosis by independent bacteriologists to whom organs were sent. These facts are regarded by the committee of control, which included two veterinary surgeons, as proof that the Spahlinger simplified bovine vaccine confers on calves an extremely strong resistance against tuberculosis, even when the virus is administered intravenously in such massive doses as to kill unvaccinated calves in about a month. The AGA KHAN, however, in an address to the press representatives, went much further than this, and stated that the vaccine solved the problem of ensuring a world supply of tubercle-free milk and meat.

The claim to have immunised cattle against experimental infection is not new. EMIL V. BEHRING made such a claim in 1902 for his bovo-vaccine, and the same claim has since been made for B C G. Both raised great hopes which have not yet been realised outside the laboratory, if we are to take the evidence of those who have tried them on the farmstead. Speaking at the recent International Veterinary Congress held in London Dr. E. A. WATSON, chief pathologist to the Animal Diseases Research Institute at Quebec, said that a comparative study in Canada over 5–6 years did not substantiate claims for B C G vaccination

as an efficient means of protection against bovine tuberculosis. His colleagues in the United States, he believed, felt the same. At the same congress came a warning from Prof. ALB. ASCOLI, of Milan, that a large number of post-mortem findings of old animals were necessary before results of inoculation from birth onwards could be ascertained. And Dr. GUÉRIN himself said it was a mistake to think that active vaccination against tuberculosis was sufficient of itself to ensure protection against the disease. It must be combined with rigid isolation immediately after birth. The congress indeed made it clear that no one has yet succeeded by vaccination in establishing permanent immunity to accidental infection from tuberculous cattle in the same shed. He who can do this will deserve well of mankind. It is true that in the recent Norfolk test with the Spahlinger vaccine the calves were housed and kept under ordinary farming conditions, and were fed on milk from cows who reacted to tuberculosis, in order to reproduce the unfavourable conditions met with in practical farming. But the test is incomplete and will remain incomplete until the life-history of the vaccinated calves is fully known.

It is in fact too early for any deduction that by systematic vaccination of this kind bovine tuberculosis can be wiped out without slaughtering diseased cattle. The group for whom Sir FREDERICK MAURICE and the AGA KHAN speak does not contain immunologists or bacteriologists whose opinion on such a vital problem would be required before the scientific world is satisfied. The Medical Research Council, or indeed any other expert body, would no doubt be willing to submit Mr. SPAHLINGER'S vaccine to a searching test. There is prima facie ground for doing so. If the vaccine were to be placed on the open market it would be possible for others to repeat and confirm the Norfolk test. But if the test is now used as the basis for an appeal to provide funds, the truth may be hard to come at.

THE TERCENTENARY OF QUININE.

IT has been said that the discovery of quinine established colonies and changed the face of history. The tercentenary of this great event has been fitly celebrated during the past two weeks by a special exhibition and series of receptions at the Wellcome Historical Medical Museum. The exhibits include specimens culled from many sources and many periods; photographs, paintings, engravings, manuscripts, and books—everything, in fact, that could conceivably interest or instruct the seeker after knowledge concerning malaria or quinine. Among the most striking were three of the original serons of cinchona bark brought from Peru by RUIZ and PAVON to CARLOS III, in 1777; these, together with specimens of Loxa and Calisaya bark, had been presented by the KING of SPAIN, and showed the old mule boxes in their original rawhide coverings, just as they came down the mountains of Peru 250 years ago. The receptions were made an occasion for illustrating the cosmopolitan circle which quinine unites in its interest. A dozen nations sent representatives to do it honour; one nation discovered it, another published its secret, a third popularised it, a fourth grows it, a fifth purchases it.

Quinine is a world's possession and must be grown by the nation which happens to possess both soil and climate suited to its whims, for it is no hardy universal, as Sir DAVID PRAIN pointed out, but a real problem to the cultivator. By what he described as an "accidental preference" the alkaloid quinine became officinal and remained the only one so honoured. Being therefore the one most frequently prescribed, it is the one most in demand, and the planter must plant accordingly, for the manufacturer pays for his cinchona bark in terms of its quinine content. Java has no cinchona monopoly, but its soil and climate have given it a quinine monopoly because the yellow bark, which happens to be richer in this alkaloid than any other, will only flourish in Java and Bolivia. While quinine remains the alkaloid of official and popular choice it is unlikely that the others will be produced on a large enough scale to show whether they are equally effective in preventing and controlling malaria; but it is a point which should be determined, for other kinds of bark yield other alkaloids more richly and at the same time adapt themselves better to other climatic conditions. In any sample of "crown" bark, whatever its total alkaloid content, some three-fifths to three-quarters will probably be quinine; in "red" bark not more than one-quarter will be quinine; while in a good "yellow" bark four-fifths will be the officinal alkaloid, and in "grey" bark there will be but traces of it. Mr. A. R. MELHUISH deplored the small proportion of the world's cinchona that comes from within the British Empire; the answer lies not with increased enterprise on the part of the cultivator, who is helpless so long as quinine is demanded, but with the medical profession, who can tell him whether or not it is any use cultivating a kind of bark poor in that particular alkaloid which has hitherto held the world's market.

MERSEYSIDE HOSPITALS BUDGET.—The voluntary hospitals represented on the Merseyside Hospitals Council have just prepared their budgets for next year. The estimated total ordinary income, apart from legacies and unforeseen gifts, is £189,467, and the estimated ordinary expenditure £339,875. Towards the deficit of £150,408 the Merseyside Hospitals Council will be able to allocate £103,500 from the penny-in-the-pound scheme, leaving nearly £47,000 to be provided by new money, the source of which is at present not obvious. Meanwhile, the Royal Southern Hospital has been obliged to sell all its available securities, amounting to £13,000, to reduce its debt of nearly £41,000. Several hospitals are contemplating special expenditure not included in the budget figures. The most important of these estimates are: Royal Southern Hospital, £17,000 on new X ray department and extension of operating theatre; David Lewis Northern Hospital, £25,000 on new out-patients' department, &c.; Liverpool Radium Institute, £20,000 for completion of new building; St. Paul's Eye Hospital, £25,000 for new out-patients' department; Birkenhead General Hospital, £12,000 on nurses' home extension and X ray department extension; Samaritan Hospital and Hospital for Women, £24,000 towards the building of the new hospital.

ANNOTATIONS

BIOLOGICAL EFFECTS OF X RAYS.

In a noteworthy contribution Prof. Sidney Russ and his co-workers record the results of experiments, carried out at the Middlesex Hospital[1] over a period of three years upon the cat and the rabbit. X rays of two different groups of wave-length were used corresponding to voltages of 150,000 and 230,000 respectively. The minimum dose of radiation necessary to produce the death of the animal was determined for each type of radiation, the whole animal being exposed. It was found that the minimum lethal dose of the more penetrating radiation was less than that of the other type in the ratio of 1 to 2·8. The tissue changes produced were most marked in small intestine, stomach, liver, spleen, respiratory tract, and white blood cells, although destructive changes could be produced in any tissue by the administration of sufficiently large doses of radiation. In the small intestine there was widespread destruction of epithelium with petechial and even larger hæmorrhages; infection occurring at a later stage appeared to be secondary to the destructive effects. Similar changes were found in the stomach. The large intestine was more resistant. In the liver, congestion and fatty infiltration were produced, with patches of necrosis. In the lungs changes were found in the epithelium of the trachea and larger bronchi, with patchy areas of hæmorrhagic and œdematous infiltration of the alveoli; at later stages endothelial proliferation was observed in the alveolar walls and areas of fibrosis. When, however, the lungs alone were irradiated they were found to be resistant to radiation, the changes described being due in the authors' view to the occurrence of infection. In the blood the effects were marked diminution in the lymphocyte content, followed later by diminution of the polymorphonuclear cells; indeed, in some of the experiments the leucocytes almost disappeared from the blood for a time. Little or no effect was observed on the platelets.

In some of the experiments localised regions only were exposed, and it was found that the typical changes in the abdominal organs were only produced when these were directly irradiated. Bacteria were frequently found in the blood at a late stage. In the authors' opinion infection plays an important rôle in the production of tissue changes, entering the blood stream, it is believed, through the damaged intestinal wall. They refer to work of Cramer, Drew, and Mottram, in which the entrance of bacteria into the circulation was ascribed to thrombopenia produced by the rays—an effect not observed in the present experiments. But Cramer and his colleagues later inclined to the view that the thrombopenia was secondary, and that infection arose from the damaging effect upon the tissues. After large doses of radiation a state of cachexia was produced in the animals somewhat resembling the clinical condition known as "X ray sickness." In view of the fact that histamine or a similar substance is known to be liberated by tissues damaged by X rays, experiments were undertaken to determine if the absorption of such a substance might be responsible for the production of this condition. It was found that the effects of histamine injections did not bear any great similarity to X ray cachexia. An interesting feature of the research from the clinical point of view was the investigation of the effects of liver feeding on the development of the X ray anæmia. Little or no influence upon the anæmia was detected, but in the animals to which liver had been administered there was an apparent increase in the sensitivity of the liver itself to the radiations. In all these animals more extensive destructive changes were observed in the liver as a result of the irradiation than in non-liver-fed animals with similar doses. This observation should lead to caution in the administration of liver extract in the hope of benefiting the anæmia produced by clinical irradiation.

The authors point out that inferences drawn from the results of experiments on lower animals may or may not be applicable to the human subject, and it is to be noted that the doses of radiation which they employed were relatively much greater than those applied in clinical work. Certain of the results however, have their clinical implications. Most important, perhaps, is the occurrence of septicæmia after irradiation of the abdomen, more particularly in view of the fact that mild intestinal lesions are not infrequently produced clinically in the treatment of malignant disease in the abdomen with heavy doses of radiation. Moreover, the fibrosis of the lungs which they describe agrees with the well-known clinical observations of Finzi and of Wintz; if, as the authors believe, this condition is due to infection attempts might be made to combat it on appropriate lines. Another observation which may prove to be of possible clinical importance is the fact that recovery may appear in the leucocyte count after almost complete disappearance of leucocytes from the blood. Nothing is known at present clinically as to the point at which an X ray leucopenia becomes dangerous. Finally, the authors suggest that further study might be undertaken of the effects of different diets during X ray treatment in relation to the occurrence of X ray sickness. Certain differences in the general effects between the cat and the rabbit might be due to the widely differing diets of these animals.

[1] The Physiological and Cytological Effects of Penetrating X Rays upon the Cat and the Rabbit. By S. Russ, Samson Wright, H. A. Bulman, and L. H. Clark. Reprint from Proceedings of the Royal Society of Medicine, Section of Electro-Therapeutics, Oct., 1930, pp. 43–60.

ROAD ACCIDENTS IN DENMARK.

One of the measures which is assuredly calculated in the long run to check the rising incidence of road accidents is an international pooling of experience—a comparison of the various means adopted in the different countries to reduce this evil to a minimum. It was, therefore, a most opportune study which Dr. F. Svendsen, of the Danish Red Cross Society, presented in October to the fourteenth International Red Cross Conference held in Brussels. After briefly reviewing the statistics for the United States and showing that the deaths from road accidents in 1929 in this country were nine times more numerous than those in 1911, Dr. Svendsen gave the following statistics for Denmark for the first six months of 1930.

	Motor accidents.	Other road accidents.	Total.
Number	4450 ..	855 ..	5305
Killed	96 ..	15 ..	111
Injured	1903 ..	641 ..	2544
Badly injured ..	977 ..	332 ..	1309

It should be noted that these figures deal only with accidents brought to the attention of the police, and

do not include any of which the police took no cognisance. More than half of all the accidents—i.e. 2727, occurred in Copenhagen, with a population of 708,600. The total population of Denmark is 3,518,000. As great a proportion of the accidents as 83·9 per cent. concerned motor-cars. In 55 per cent. of the traffic accidents, the blame was laid exclusively on the drivers of motor-cars; in 13·7 per cent. bicyclists were held responsible, in 8·5 per cent. pedestrians and passengers; only in 2 per cent. were physical conditions, such as the state of the roads or visibility, held responsible, and in 1·2 per cent. the state of the motor vehicle. In the remainder, the responsibility was shared by a combination of two or more of the above factors. Travellers familiar with the swarms of bicyclists in the streets of Copenhagen will not be surprised to learn that they and pedestrians play a much more important part in the genesis of motor accidents than is the case in other countries. Among the improvements effected of late, the filling in of ditches beside the roads in order to provide bicycling paths deserves special mention. This reform has been made possible by the arrangement which allots part of the revenue from motor-car taxation to the local authorities. There are over 2500 doctors in Denmark—i.e., one for every 1360 inhabitants, and if Copenhagen and its 629 doctors are discounted, the proportion of doctors to inhabitants is as one to 1500. Thanks to the comparative density of the population even in the country, the radius of action of a general hospital (of which there were 170 in 1929) is seldom more than 15 kilometres. Copenhagen is served with 16 and the rest of the country with 139 ambulances, the radius of whose action is about 15 kilometres. For the purpose of comparison it should be noted that the corresponding radius of action in England is about 25 kilometres. The part played by the Danish Red Cross with regard to ambulances consists largely of financing them at the outset; later, they are often taken over and run by the local authorities.

AVERTIN IN OPHTHALMOLOGY.

IN the *British Journal of Ophthalmology* for November Mr. O. Gayer Morgan and Mr. J. M. Lees record their experience of rectal narcosis with avertin, based on more than 50 cases, including cataract extraction, acute glaucoma, excision, evisceration, acute dacryocystitis, removal of the lacrymal sac in chronic dacryocystitis, and minor and major plastic operations on the eyelids. They conclude that it is not a dangerous drug when given with care, and that it well merits a trial in ophthalmic surgery. The amount injected should never exceed 1·0 g. per kg. of body-weight, and the temperature should not be more than 40° C., for otherwise the avertin may decompose and set up colitis; to ensure against this two drops of Congo red solution can be added to 5 c.cm. of avertin, and decomposition will be shown by appearance of a blue colour. If any of the solution, as injected, be returned by the patient it is unsafe to attempt to make up the amount by an extra injection, since absorption is so rapid that it is impossible to estimate how much of the drug has been rejected. In most cases no other anæsthetic, general or local, was used, but Morgan and Lees employed a preliminary injection of morphia gr. ¼ with atropine gr. 1/100, though this is not considered necessary. If the claims of its advocates are confirmed the drug has obvious advantages where a general anæsthetic is contra-indicated or a local anæsthetic is insufficient. In cataract extraction it is chiefly applicable to very nervous patients who cannot be relied upon to keep still during the operation, but when operating with avertin it is necessary to fix the eyeball firmly with forceps during the incision, and this fixture is not so convenient as voluntary depression by the patient himself in obedience to the surgeon's directions. Nevertheless any method of relieving apprehension either before or during an operation on the eye is worth a great deal. The main contra-indications to the use of avertin are a serious degree of nephritis or severe disturbances of the liver. Old age is not itself of importance, and though the authors of this paper have not used the drug on children under 16, there seems to be no reason why they should not do so. Avertin is a narcotic rather than an anæsthetic, and one of its main advantages is that it can be used to remove the patient's anxiety for an hour or so before operation.

THE I.M.S.

IN an ample quarto volume Lieut.-Colonel D. G. Crawford, whose "History of the I.M.S." did very nearly as much for the service as Boswell did for Dr. Johnson, has continued his labours in a volume entitled "The Roll of the Indian Medical Service."[1] The title is, perhaps, unfortunate, since it suggests a book on the lines of the Army List or Bradshaw. In fact Colonel Crawford takes the opportunity, in the introduction, of bringing his history up to date, and apart from the brief individual records of service many notes testify to the enterprise of the author in discovering interesting material in the most unexpected sources. The term I.M.S. has been used in a very broad sense to cover the name of every man who served, even for the shortest period, in the East India Company's land medical services, including the surgeons' mates (assistant surgeons), who were not commissioned officers, but served under warrants issued by the colonels commanding their regiments. Some remarkable histories may be deduced from the laconic entries in this Roll. In the Madras list occurs the name of Mungo Park, the son of the famous African explorer, who had himself been surgeon's mate of an Indiaman. Readers of Lockhart's "Life of Scott" may remember how the father, having obtained by influence the promise of a post in the company's service, provided he could qualify as a surgeon, rushed off to commence his medical studies, and in six months time returned with the required diploma. Other even more striking examples of adaptability are not difficult to find. A sergeant in the St. Helena garrison was given dispensary duties, and having served in that capacity for 15 years was appointed assistant surgeon. Later he went to England, obtained the M.R.C.S., and returned eventually to become full surgeon at St. Helena. As time went on, and medicine rose in the social scale, I.M.S. men not only cured the wives and families of potentates, and shook pagoda trees, but distinguished themselves in many other ways, rendering eminent services in several branches of science, furnishing distinguished administrators and diplomats, and founding commercial houses the names of which are still household words in India. The firm of Jardine and Mathieson was started by one of the company's surgeons, and the well-known publishing house of Thacker and Co., which produces Colonel Crawford's work, is also said to have had a medical origin.

The Roll contains several interesting appendices, notably tables of honours and rewards, and analyses of

[1] Roll of the Indian Medical Service, 1615–1930. Compiled by Lieut-Col. D. G. Crawford, Bengal Medical Service, ret. London: W. Thacker and Co. 1930. Pp. 711. 28s.

degrees and diplomas and medical schools. As regards academic distinctions, the service has always been well to the fore; a large proportion of officers have held one or more of the higher qualifications, many of them acquired in middle age after special courses of study. A curious feature is the apparent unpopularity not only of the I.M.S., but the R.A.M.C. and Naval Medical Service, with the northern English schools. Some names from these schools are no doubt entered under the other universities or the London medical schools, but there is an almost entire absence of entries under Liverpool, Birmingham, and Leeds degrees in the various lists, and only a moderate representation of Manchester. The Scotch and Irish universities, on the other hand, have always been well represented, as also the London schools, and there are a fair number of men with the London and Cambridge degrees. The inscription on the title-page of this book is somewhat sinister, yet Colonel Crawford had words of modified cheer for the service when he presided at the annual dinner two years ago. He said that though they could no longer hope to obtain diplomatic plums and provincial governorships, many attractive openings remained, and plenty of opportunities for useful work. The old Indian service families still send their sons into mercantile firms in India, if not so many as formerly into the services themselves. It is justifiable to hope that the I.M.S. in a contracted form will take on a new lease of life under the changed conditions which the next few years will see.

HYPOGLYCÆMIA FOLLOWING INSULIN TREATMENT.

THE fear of hypoglycæmia should no longer deter patients from using insulin for diabetes. The symptoms of overdosage can readily be recognised; and there is a simple and satisfactory remedy in the administration of glucose by the mouth, by rectum, or, if necessary, by intravenous injection. Although slight symptoms are common—indeed, some experienced physicians allow their patients to become a little hypoglycæmic in the early stages of treatment so that they may learn the sensations and how to combat them—actual coma from insulin hypoglycæmia is rare. Deaths have, of course, been reported, but in fatal cases there have usually been additional complications, such as extreme inanition, Graves's disease, pancreatitis, acute alcoholism, or gross carelessness. F. Rathery and Sigwald [1] point out, however, that nowadays insulin is widely used in the treatment for conditions other than diabetes and here the risk of hypoglycæmia is certainly greater, since the blood-sugar is not above normal to begin with. They report a fatality following insulin treatment combined with glucose administration, the patient being a young woman under treatment at a sanatorium for Pott's disease of the spine. Because of failure to gain weight, loss of appetite, vomiting, and signs of acidosis, insulin had been given together with intravenous and rectal injections of glucose. When seen by Rathery and Sigwald she was in deep coma, breathing five times per minute though not cyanosed, with tetany of the hands and exaggeration of tendon reflexes. The blood-sugar was reduced to 20 mg. per 100 c.cm. In spite of treatment and raising the blood-sugar to 149 mg. per 100 c.cm. the coma deepened and the patient died. At autopsy there were bilateral pleural adhesions with consolidation at the left base, old tubercle at the right apex, but no signs of meningitis or other alteration sufficient to explain the coma. It was concluded, therefore, that death was due to coma resulting from the administration of insulin, of which 260 units had been given in six days.

[1] Bull. et mém. Soc. méd. hôp. de Paris, Dec. 1st, p. 1702.

WHO WAS WHO.

To the November issue of the *King's College Hospital Gazette* Mr. Willoughby Lyle contributes an article which will be found extremely useful to many readers. It is a summary of the history of the medical school, composed mainly of biographical details of the medical staff up to 1913. During the centenary of its existence the hospital and school have enjoyed the assistance of a remarkably brilliant staff, a large proportion of whom received their preliminary education at the College. The reason why the article is so particularly valuable is that in each case the year of the appointment of these men is clearly stated, as well as the length of their tenure of office, so that it is easy to see which of them functioned simultaneously at King's, and who were their analogues at other medical centres. The biographical notes are supplemented by interesting details in the domestic history of the College. We are thus introduced to such an episode as the discovery of Carlo Ferrari, the murdered Italian boy, in the prosector's room, while characteristic sayings of such well-known heroes of the past as George Johnson, Richard Partridge, William Fergusson, and John Curnow are recalled to memory. A certain number of the staff of THE LANCET of 40 years ago will remember their brilliant and erratic colleague, Curnow, whose success as student, demonstrator, and teacher, was so entirely out of proportion with any position to which he ever attained as practitioner. It would be extremely useful for the purposes of many medical writers if the editors of all the hospital gazettes would publish a similar article concerning their own great men, for over and over again in medical writing—in text-books as well as in essays and journalistic work—it may be necessary, for the clinching of an argument or the provision of an illustration, to allude to some particular work or occurrence associated with a name, when dates and the identifications of institutions and contemporary workers become significant.

PATHOLOGY OF CARDIOVASCULAR SYPHILIS.

IN 1914 A. S. Warthin reported a very high incidence of syphilis in post-mortem material; he stated that the characteristic lesion of syphilitic infection of the heart is a localised interstitial myocarditis, and claimed to have demonstrated spirochætes in these lesions. In the Lumleian lectures this year Carey Coombs [1] said that he has been unable to confirm these findings. As he sees it, cardiovascular syphilis is essentially a lesion of the root of the aorta, the heart being affected in two ways as a result of this aortitis. First, the aortic valves become incompetent with the development of aortic regurgitation, and secondly, and by far the more important, the mouths of the coronary arteries become choked by the swelling of the aorta, thus cutting off the blood-supply of the heart. Coombs finds the rest of the coronary tree, beyond the origin, to be normal except for a slight degree of associated arterio-sclerosis. In the myocardium itself he found no significant morbid lesion except hypertrophy, and this depends for its occurrence on the existence

[1] Coombs, C. F.: THE LANCET, August 2nd, 9th, and 16th, 1930.

of aortic incompetence. A symposium on cardiac syphilis in the October number of the *American Heart Journal* suggests that the majority of American workers agree with these findings and have failed to confirm Warthin's statements. Martland [2] suggests that the mediastinal glands filter the spirochætes from the circulation and act as reservoirs in which the organisms lie latent for many years. Further, he believes the earliest stage in the involvement of the aorta to be an invasion of the adventitia by spirochætes carried along the perivascular spaces around the vasa vasorum by retrograde flow from the mediastinal glands. He explains the low incidence of congenital syphilis of the heart and aorta by saying that in the fœtus the circulation in the lungs is so small that comparatively few spirochætes traverse the lungs and thus few are filtered off and stored in the mediastinal glands; therefore in congenital syphilis the aorta—which in acquired syphilis is infected from these glands—escapes.

FOCAL SEPSIS AND EYE DISEASE.

AT a meeting of the Medical Society of London, held on Dec. 8th, a discussion took place on the relation between certain diseases of the eye and inflammatory foci in other parts of the body. Mr. A. F. MacCallan grouped such diseases under three headings: (1) those which can be cured by the removal of the source of infection, including increase of lacrymation, recurrent tarsal cysts, phlyctenular conjunctivitis and keratitis, and some cases of iritis in which the focus of infection is oral or tonsillar; (2) those which can be alleviated, including other cases of iritis, irido-cyclitis and choroiditis, and also progressive myopia, an important disease, most cases of which, he maintains, have an intimate connexion with sepsis; (3) those not necessarily caused by, but associated with sepsis, a division in which he includes incipient cataract, peripheral striæ in the lens being regarded as an indication for a thorough investigation into the condition of the teeth and tonsils; glaucoma simplex, many cases of which can, he believes, be cured by non-operative measures, once the source of infection is removed; and lastly certain cases of detached retina, due to exudation from the choroid into the subretinal space, and in which no holes exist unless they are allowed to go on without removal of the focus of infection. Over and above these cases Mr. MacCallan maintains that certain cases of vitreous opacities or vitreous "dust," in which the visual acuity is not necessarily affected, can be cured by the removal of septic foci. Apart from the teeth and the tonsils such foci should be looked for in the nasal sinuses, the intestinal canal, or the prostate. Emphasis was laid on the importance of careful investigation into all these possible sources of infection before the performance of any major operation on the eye. Mr. Ernest Clarke added to the list of ocular diseases associated with sepsis several cases of retinal hæmorrhages—generally small hæmorrhages into the nerve-fibre layer—due to septic infection, and he showed several striking pictures of retinal conditions before and after appropriate treatment. Sir William Willcox added to the list of eye diseases which may be caused by sepsis by including thrombosis of the central artery of the retina and retro-ocular neuritis. Dr. Moreland McCrea, who has described [3] appearances somewhat similar to those mentioned by Mr. Clarke, under the title "retinal petechiasis," raised the question how long after the removal of a septic focus in the body is it safe to undertake a major operation. He was inclined to allow a period of six months, but Sir W. Willcox was sure that an interval of three weeks was sufficient. The question must in practice be decided in relation to the extent of the sepsis on the one hand and the urgency of the operation on the other. Although there were dissentients, the consensus of opinion at the meeting was to emphasise the importance of focal sepsis in a variety of eye diseases.

[2] Martland, H. S.: Amer. Heart Jour., Oct., 1930, p. 1.
[3] THE LANCET, 1927, i., 1285.

ANTENATAL SUPERVISION.

As a result of their investigation into two thousand deaths of women in childbirth, a Departmental Committee noted [1] the absence of antenatal care in 17 per cent. On this and other similar experience the Ministry of Health bases a belief that one of the essential measures for securing a reduction in maternal mortality is a general and sustained effort to enlighten the women of the country on the importance of antenatal supervision. Circular 1167, issued to maternity and child welfare authorities, mentions the decision of the Government to undertake the necessary negotiations with the authorities concerned, with a view to formulating a scheme on a national basis for the care of maternity. The additional expenditure, it is remarked, will be small in comparison with the advantages to be gained, and the development is one of the extensions in consideration of which an additional amount of £5,000,000 was included in the exchequer contribution under the Local Government Act for the next three years. Many local authorities have already provided facilities for antenatal supervision, but (Memo. 156/M.C.W.) it is not sufficient to organise clinics without associating the doctors and midwives practising in the area much more directly than has yet been done with the centre and its staff. The antenatal centre suffers from the disadvantage that the doctor in charge seldom if ever actually delivers the patient or is called in by the midwife in an emergency. For this reason closer coöperation between the centre and the doctors practising in the area which it serves is clearly desirable. In the case of women who engage a doctor for the confinement, the necessary antenatal supervision will be undertaken by him, and in the case of women who are insured persons the insurance practitioner is responsible for medical attendance during pregnancy. For these women the antenatal centre should be available for any additional care considered necessary. But there are uninsured women who engage midwives for the confinement and are not in a position to pay a doctor's fee for antenatal supervision. For these also provision is recommended through the maternity and child welfare service, and at a clinic, if accessible and the patient is willing to attend. But in sparsely populated areas it is impracticable to provide centres within a reasonable distance of the women's homes, and in towns there are many women who cannot be persuaded to attend the centres. Some county councils are already making arrangements with private medical practitioners to undertake routine antenatal examination of uninsured women who have engaged midwives for the confinement, and the Ministry looks to an extension of this arrangement also in urban areas. It is suggested that the local authority should prepare a list of doctors practising in the area who are willing to undertake this service. For the staffing of the antenatal centres it is regarded

[1] See THE LANCET, August 9th, p. 321, and August 16th, p. 367.

as preferable to secure the part-time services of private practitioners who possess the special qualifications prescribed by the regulations. Where it is possible facilities should also be provided by other doctors to see their patients at the centre if they so desire. Arrangements on these lines should prove to be one of the most helpful ways of teaching women to accept antenatal supervision as part of the normal preparation for confinement.

THE PROHIBITION OF VIVISECTION.

ON Tuesday last Commander Kenworthy asked leave to introduce a Bill into the House of Commons "to prohibit the expenditure of public money on vivisection experiments." The B.M.A. had issued a circular letter to the Members setting out the usual, and unanswerable, warnings against the dangers of such a measure. The letter explained that the word vivisection implies in the popular mind serious operations which, while they are only permitted by an Act of Parliament to be performed under efficient anæsthesia, form but a fraction of the experiments done for the routine purposes of general health, or for assisting in the medical treatment of individuals and of the community. The potency of many remedies in use to-day, notably glandular extracts, vaccines, sera, and some drugs, such as arsenicals (e.g., salvarsan) cannot be determined except by animal experiments; without being so tested they may be uselessly weak or dangerously strong. Lives depend upon these powerful medicaments being of standard strength, while the amount of diminution of pain and simplification of treatment that may result from the right employment of such a drug as pituitary extract is an unanswerable argument for the use of the products of animal research. Against the value of this drug we must balance the danger of an overdose, but by proper control the standard of potency, expressed in definite units, has been secured. The Medical Research Council is responsible for this standard, and the letter points out that the effective control of therapeutic substances can only be ensured by the State—that is to say, by the expenditure of public funds. Assuredly persons, who are really and widely humane, can only desire to arrest physiological research from a misunderstanding of what that term implies. Leave to introduce the Bill was refused by a small majority.

POST-GRADUATE COURSE IN PSYCHOLOGICAL MEDICINE.

AT the Tavistock Clinic on Dec. 17th the concluding lectures were delivered of an introductory course on psychological medicine for the general practitioner. Dr. H. Crichton-Miller, whose 12 lectures dealt with type psychology, explained, as a preliminary, that the course had come into being because the clinic was in great financial need, and that the proceeds of his lectures and those of Dr. E. Graham Howe were to be devoted to its support. The gain to the clinic will not have been only a material one. An audience of nearly 100 assembled every week at Friends House, since the class was too large to be accommodated in the house at Tavistock-square. Both courses were admirably framed, and their arrangement must have involved careful planning. The audience here, as in most groups of medical men and women who wish to be brought up to date in any subject, included doctors whose qualifications were taken very early as well as very late in the first quarter of this century. The problem of presenting psychological medicine to a class of such varied experience and training differs from that of presenting, say, biochemistry to a corresponding group. In both subjects the stage has often been shifted during the last 25 years and the old backgrounds have been replaced. The risk in designing courses on biochemistry is that a recapitulation of the changes in outlook may bore those to whom they are familiar, while the more senior devotees of litmus paper will remain for ever unconvinced of the importance of the hydrogen-ion concentration or of other conceptions now held to be fundamental. The risk involved in the presentation of modern views on psychology and psychopathology is more serious. It is that the course will be full enough to arouse but not full enough to allay that resistance which is the natural reaction to new ideas when these threaten the accepted canons of good taste. Here a gradual progress led to the smooth acceptance of unfamiliar dogma. The appreciation of the class was manifest in their punctual attendance not only at the lectures but at evening seminars held at the clinic, where questions could be freely asked and difficulties explained. If similar classes could be organised in different centres throughout the country, they should be assured of equal success.

THE SUPPLY OF HELIUM.

AT the time of the disaster to airship R101 we were informed that legislation was to be introduced in the United States to permit the exportation of helium for the use of foreign aircraft. Section 4 of the Act of 1927 prohibiting this exportation has now become inoperative, as Mr. H. B. Milner points out in an informing note on the Denationalisation of Helium in *Nature* for Dec. 13th. Mr. Milner sets out the astonishing progress made in obtaining helium in a pure condition at a moderate cost. In April, 1928, the U.S. Government began to develop the production of helium-bearing gas at Amarillo in Texas, and in August a new well at Soncy, six miles from Amarillo, was found to provide a flow of 7,000,000 cubic feet per day of a gas containing 1¾ per cent. by volume of helium. In May, 1929, the first tank car containing 200,000 cubic feet of helium was despatched to Virginia for use in U.S. army dirigibles. In September, 1929, the Texas well provided more than 850,000 cubic feet of helium of 97·7 per cent. purity, and the output for the year ended June 30th, 1930, amounted to 9,800,000 cubic feet. The price per 1000 cubic feet of helium came down from 17·63 dollars in September, 1929, to 9·64 dollars in January, 1930. An official American communication states that under present conditions it costs less to operate airships with non-inflammable helium than it would cost to operate them with flammable hydrogen. It seems then that we are within sight of the possibility of replacing hydrogen by helium in our own airship construction.

THE President and Mrs. Watts Eden will receive the guests at a reception to be held by the Royal Society of Medicine, at 1 Wimpole-street, London, from 8.30 P.M. on Jan. 21st, 1931. Dr. Arnold Chaplin will give an address entitled Great Figures in History or Misconceptions Removed.

THE Royal College of Physicians of London will be closed from Wednesday, Dec. 24th, until Wednesday, the 31st, both days inclusive.

CLINICAL INTERPRETATION OF AIDS TO DIAGNOSIS

A Series of Special Articles, contributed by invitation.

LXXXIX.

BACTERIOLOGICAL EXAMINATION OF WATER.

PART II.*

Fallacies of Occasional Examination.

BACTERIOLOGISTS are frequently asked to examine an isolated sample of water and to give an opinion on its suitability for drinking purposes. This sample may have been collected by someone having no real knowledge of water examination. These reports are given, I think frequently, but in my opinion they are usually of very little value. Standards of bacterial purity have been laid down by individuals and even by committees of bacteriologists, but the experienced water bacteriologist realises that these standards have to be used with a great deal of care, and we all agree that before attempting to give an interpretation of the results of a bacteriological examination of water it is essential to have particulars of the methods of collection, the time at which it was collected, &c. Wherever possible the bacteriologist should be given information of the gathering ground so that he is acquainted with the possible sources of pollution. To take only one example: an open reservoir near the sea-side may become contaminated by excreta from sea birds, and, if this factor is not recognised, or not known, by the bacteriologist his report may be of no practical value. He may condemn a water-supply which from a health point of view may be an excellent one.

The methods of examination are, on the whole, satisfactory, but they are necessarily purely arbitrary, and do not pay sufficient attention to the chance variation of samples. The whole aim of the examination is to find evidence of excretal pollution. With our present methods we are rarely able to isolate from the water disease-producing bacteria, such as *B. typhosus*, &c., and, therefore, we content ourselves with finding the number of living bacteria, and particularly those of intestinal origin. As I have already emphasised, the greater the number of living bacteria the greater is the amount of decomposing organic matter, and the more intestinal bacteria found the greater is the chance of there being amongst them disease-producing ones. This is only a probability and, after all, the evidence is circumstantial, and a verdict which condemns the water cannot fairly be given unless the bacteriologist has a good knowledge of his supply and has carried out several examinations.

Some Working Standards.

Household water.—In a household water-supply there is the possibility of contamination from dirty taps, &c., and, therefore, in collecting a sample, the orifice of the tap should be burned with a spirit lamp or flame of some kind, and the water allowed to run freely for at least five minutes, before the sterile vessel into which it is to be collected is filled. Again, leather washers may be a source of pollution, and the bacteriologist must be fully alive to all such sources of contamination. The best sterile receptacle is a bottle of 4 or 6 oz., boiled for five or ten minutes. This should be filled and stoppered with a cork that has also been boiled. The sample should be sent to the laboratory as soon as possible after collection. If the water is satisfactory, that is to say, if it contains no *B. coli* in 60 to 80 c.cm., the need for a second examination is hardly necessary, but if the water contains *B. coli* in 10, 20, or even 40 c.cm., then it should be regarded with suspicion; but it should not be condemned until at least two other samples confirm the finding. The organisms are not uniformly suspended in water, and it may chance that in a single sample a number of bacteria in a small piece of organic matter may have got into the specimen, and a sample taken immediately afterwards may be free.

Deep well, or spring water.—In dealing with deep well water or water from springs where there is little chance of pollution, *B. coli* should be absent in 80 to 100 c.cm., and the total bacteria count on gelatin in three days at 20° should not exceed 200 per c.cm. Grown on agar at 37° most of the ordinary water bacteria fail to develop, and therefore the total bacteria on agar should not exceed 10 to 20 per c.cm.

With *upland surface water*, such as is the supply of most large cities, and especially where filtration is effective, the total bacteria count on gelatin in three days at 20° should not exceed 400 (very commonly it is between 50 and 100), on agar at 37° 10 to 30; and the *B. coli* should be absent in 40 to 60 c.cm., in an average of three to four specimens. On one examination alone, *B. coli* in even 10 c.cm. might indicate a satisfactory water-supply.

The presence of streptococci and B. *welchii* are not common, and need not be dealt with in this article.

Conclusion.

As I have already indicated, the real object of a bacteriological examination of water in this country is to ensure a pure supply—that is, one free from the disease-producing intestinal organisms. For many years typhoid fever was the disease we wished specially to guard against. More recently the paratyphoid fevers have taken the place of typhoid. Dysentery, particularly the bacillary form, is much more common within the last few years, and some of the food poisoning organisms—e.g., Gaertner's bacillus—have been found in a water-supply. These food poisoning organisms are not uncommon in the lower animals—mice, birds, &c.—and, consequently, may get into a water-supply.

With this knowledge it seems to me that a regular and a very thorough bacteriological examination of our water-supplies is essential, but the interpretation of the results calls for special care and experience.

J. M. BEATTIE, M.D. Edin., L.R.C.P. Lond.,
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* Part I. appeared last week.

HOSPITAL ACCOMMODATION IN LEEDS.—Last week Lord Moynihan, by invitation, formally presented a cheque from the Leeds Jewish community for the endowment of a bed at the local Herzl-Moser Hospital in the name of Mr. Lyle Goodman, an active worker on behalf of that institution. Speaking upon the need for coördination of hospital services, Lord Moynihan alluded to the fact that while there were at the moment 1319 patients awaiting admission to Leeds General Infirmary, at the St. James's Hospital there were empty beds.

SPECIAL ARTICLES

THE VALUE OF FOODSTUFFS FOR VITAMIN A.

By E. M. Hume
AND
H. Henderson Smith.

(*From the Department of Experimental Pathology, Lister Institute.*)

The discovery that purified carotene is a substance which provides a source of vitamin A of constant value when tested biologically on animals has brought the accurate standardisation of food materials for their value in vitamin A appreciably nearer. According to the differing biological techniques used, the minimum daily dose of carotene for a rat, deprived of vitamin A, has been found by some workers to be from 0·005–0·01 mg.[1] [2] and by others to be about 0·003 mg.[3] The former required a considerable growth performance from their experimental animals; the latter used as their criterion the maintenance of the depleted animal over a set experimental period. The exact particulars of the latter method are set out in the paper referred to,[3] and we have now used it for some little time. No attempt has been made to apply it methodically to the evaluation of food materials, but a few scattered observations have been obtained which are instructive in several ways. They seem to show that it would be easy to standardise food materials against carotene for their value in vitamin A, and that the minimum dose of some common foodstuffs is considerably smaller than had been supposed.

Much of the earlier work on the evaluation of foodstuffs for vitamin A was very roughly done; the materials to be tested were only fed as percentages in the diet, so that the actual daily minimum dose for an individual was not ascertained, but could be approximately worked out. A certain amount of more accurate evaluation has been done more recently, but the biological technique has always yielded results which were not very easy of interpretation. Dye, Medlock, and Crist,[4] for instance, used 0·2 g. as their smallest daily dose of green lettuce, and obtained maintenance and fair growth with it; but they did not test any smaller doses.

Till recently the minimum daily rat dose of the foodstuffs commonly deemed to be the richer sources of vitamin A were, with the exception of cod-liver oil, thought to be of about the magnitude of 100 or 200 mg. We, ourselves, used daily supplements of 200 mg. of fresh green prickly seeded spinach (*Spinacea oleracea*) or of 100 mg. of New Zealand butter, over long periods, as the sole source of vitamin A for rats, and found them adequate for maintenance and considerable growth,[5] but smaller doses were not tried. Moore [2] recently pointed out that the minimum dose of raw carrot was smaller than had been supposed. He found it to be 100 mg. daily or less. On 100 mg. two rats showed fair growth; the only rat which received 50 mg. died.

Very much smaller values have been obtained by McLaughlin [6] [7] who made a considerable examination of New Zealand spinach (*Tetragonia expansa*), investigating the value of leaves of different sizes. She found that, according to the size of the leaf, the dose needed to maintain life and promote some growth varied from 70 to 120 mg. per rat *per week*. Of prickly seeded spinach, 70 mg. weekly were found sufficient. These values are extremely small, but it is not very clear how completely McLaughlin's rats were depleted, and it is not easy to be certain, therefore, how far the dose was a full maintenance dose or not; her comparisons are valid for her own work, but are not certainly truly comparable with those of other workers.

We have made a few tests on fresh prickly seeded spinach, fresh cabbage, and New Zealand butter, from which it is evident that smaller amounts than had been supposed necessary of these foodstuffs also will suffice to maintain life in the rat. The results are very fragmentary, but are set out in the Table, together with the values obtained by the same method with two samples of carotene, one derived from spinach and one from carrots. Reference to the Table shows that two rats were maintained on 20 mg. and 30 mg. daily of fresh spinach respectively. A little growth was made on the 20 mg. dose, showing that even this was probably not quite minimal. The 20 mg. dose was tried because, according to the figures of Arnaud, quoted by Leroy S. Palmer in his book on "Carotinoids," it would represent a carotene

Table showing Growth of Rats on a Diet devoid of Vitamin A, after a Preliminary Depletion Period, on addition of various daily doses of Carotene, Spinach, Green Cabbage, and Butter.

Material.	Daily dose mg.	Litter No. and sex of rat.	Days of maintenance on dosage.	Growth in period of dosage (g.).	Remarks.
Carotene from spinach M.P. 172°C.	0·002	1432. M	28	+10 −27	Died.*
		1440. F	28+	+ 9 − 9	Failing.†
	0·003	1432. F	24+	+15	—
		1441. M	28+	+37	—
		1440. M	28+	+32	—
		1440. F	10+	+24	Cured.‡
	0·005	1440. M	28+	+46	—
Carotene from carrot M.P. 173–174°C.	0·002	1463. M	28+	+50	—
		1463. F	28	+ 9 −12	Failing.§
	0·003	1453. F	28+	+26	—
Fresh spinach	20	1272. F	28+	+15	—
	30	1272. F	28+	+23	—
Fresh green cabbage	20	1441. M	28+	+10	—
		,,	28+	+16	—
		,,	5	− 8	—
	80	,,	28+	+61	Cured.‖
New Zealand butter	14	1533. F	28	+11 − 2	Failing.¶
		1533. M	28+	+26	—
	28	1440. M	28+	+23	—
		1533. M	28+	+38	—
		1569. F	28+	+19	—
		1580. F	28+	+28	—
	56	1463. M	28+	+60	—

Dosage was maintained for 28 days. The symbol + after the number of days of maintenance signifies that the animal appeared likely to survive longer when dosage was stopped.

Remarks.—*Died at end of experiment. †Failing at end of experiment. ‡Cured after failure on other material. Abbreviated experiment. §Huge calculi in bladder. ‖Cured after 20 mg. dose. ¶Failing at end of experiment. Calculi.

content of about 0·003 mg., a dose which, as already mentioned, is found by this method to be minimal.

With fresh cabbage two rats were maintained on a dose of 20 mg. daily, while a third failed on this dose, but was cured and grew normally on 80 mg. daily. With New Zealand butter one rat made normal growth with a daily dose of 56 mg., four maintained and made some growth on 28 mg., while on 14 mg. one failed and one survived.

If the minimum dose is taken as being the smallest dose upon which all the animals are able to survive, the above results give indications that the minimal daily rat dose of spinach is 20 mg. or less, of cabbage more than 20, but less than 80 mg., of New Zealand butter 28 mg. or less. Reference to the Table shows that the corresponding minimum daily dose of carotene by the same method is 0·003 mg. Too few rats were used in these experiments for the values to be taken as finally conclusive, but they are indicative, and we have found that clear-cut results can usually be obtained with three or four rats for each dose of material, and that doses differing from one another by 50 per cent. or possibly less can be differentiated. McLaughlin [6] was able to differentiate between doses which only differed by about 10 per cent., but the number of animals on each dose was large, usually about a dozen.

It thus appears that the minimum dose for many foodstuffs is considerably less than has been supposed, and that it can be ascertained with considerable accuracy, and without employing large groups of animals, by the biological technique based on maintenance of the rat rather than on growth. It is also suggested that the evaluation of foodstuffs might be standardised against the value of carotene, if a specification were agreed upon as to the properties—for instance, melting-point and colour-index—to be required from the carotene which should function as the standard. If a mapping out of the value of the commoner foodstuffs for vitamin A were carried out it would be an important step towards determining the adequacy or inadequacy of human dietaries in this respect. Attention has been focused lately on the possibility that a partial deficiency of vitamin A is not uncommon, and that a condition of latent deficiency disease results in which the individual is liable to infectious invasion of the mucous membrane, more particularly in the respiratory passages, as well as to other ills.[8] Accurate evaluation of a dietary, with the knowledge at present available, presents insurmountable obstacles, and verdicts as to adequacy or inadequacy of vitamin A are, except in extreme cases, quite conjectural.

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WESTON-SUPER-MARE HOSPITAL: NURSES' HOME. A new nurses' home for the Weston-super-Mare Queen Alexandra Memorial Hospital was opened last week by Dr. G. H. Temple, the senior member of the honorary surgical and medical staff. The home contains 22 bedrooms and has the usual amenities. Application is being made to the General Nursing Council for the recognition of the hospital as a training school.

MEDICINE AND THE LAW.

Partnership Dispute.

SOME remarks on medical partnerships in "The Conduct of Medical Practice" may appropriately be repeated in view of recent litigation. Partnerships, it is observed, sometimes fail because the partners are temperamentally incapable of carrying on together. "When this occurs the partners cannot be too vehemently urged to keep out of the law-court." If they insist on going to law they will probably involve themselves in a distressing and expensive struggle which will injure them and perhaps discredit in the public eye the profession to which they belong. The recent litigation to which we refer was a slander action brought by one partner against another. It was stated by the plaintiff's counsel, in his opening speech, that the parties, who had been in partnership since 1911, had always been antipathetic in character and outlook, and for years there had been friction between them. The plaintiff, for instance, had complained of the way in which, while he was absent on holiday, the defendant had looked after his patients. In February, 1929, it was said, the plaintiff had an acute attack of gastritis as the result of overwork, and the defendant's attitude had been so unsympathetic as to suggest that the defendant thought the plaintiff was shamming. A few months later, when the plaintiff was under treatment by another practitioner, the defendant seems to have formed the opinion that the plaintiff was not ill at all, but was drugging himself with morphia. This suspicion influenced the defendant so strongly that, when the plaintiff was away in France for a holiday in August, he really believed that the plaintiff was not in France at all but was hanging about the neighbourhood so that he might slink into the house and satisfy his craving for drugs. There was no doubt that someone had been taking drugs from the dispensary cupboard. The defendant had marked the bottles and found many ounces of morphine missing between the end of August and the middle of October. But, when at last the defendant taxed the plaintiff with the taking of the drug, the plaintiff (who vigorously denied the allegation) discovered that a nurse who had access to the cupboard was the culprit. This unhappy woman turned out to be a drug addict; she was caught in the dispensary with the morphine bottle in one hand and the measure in the other. It thus became perfectly clear that the defendant's suspicions of the plaintiff had been mistaken. The accusation, however, had not made the parties any better friends and the plaintiff eventually brought an action for slander.

Now, if one partner should honestly believe that another partner is drugging himself improperly, and if the former communicates his suspicion in private to the latter, there is no slander because there has been no publication to a third party. In this particular case the matter had gone further. The regional inspector of the Ministry of Health had paid a routine visit in November, 1929, and to him the defendant had mentioned the disappearance of the drug and his suspicion against the plaintiff. In addition, the defendant had apparently made a similar communication to another practitioner who had acted as locum tenens in the plaintiff's absence in France, and who was negotiating with a view to entering the partnership in the plaintiff's place if the vacancy occurred. There was thus sufficient publication, but two further legal obstacles stood in the

plaintiff's way. It is a peculiarity of the law of slander (i.e., defamation by spoken, not by written, words) that words are ordinarily not actionable unless they were such as to cause appreciable damage for which compensation can be assessed. This alleged slander about the drug-taking was actionable only if it charged the plaintiff with the commission of a crime—e.g., the stealing of the drugs from the cupboard—or if it disparaged the plaintiff in the way of his profession as a medical practitioner; in either of those two cases the words would be actionable in themselves; but otherwise the plaintiff would have to prove that he had suffered special damage. The second obstacle was the defence of privilege. There are times when it is a duty to speak out frankly in disregard of the consequences. If a practitioner honestly thinks his partner is improperly drugging himself, he may be entitled to privilege if he speaks out in pursuance of his duty and to protect the partnership interests; he may also legitimately speak out to the Ministry of Health inspector if it is the inspector's duty to see that the supply of drugs is not misused. This defence of privilege can be destroyed if the defendant can be shown to have spoken out maliciously and to have been actuated by some wicked or indirect motive.

The judge held that all the statements which were made by the defendant were privileged; it was for the jury to say whether there was any malice which rebutted the privilege. These various legal issues are reflected in the four questions which Mr. Justice Horridge left to the special jury. The questions were put in duplicate to the jury in view of the alleged double publication to the locum tenens and the regional inspector. The jury gave the same answers in both cases and answered all four questions in the negative. The first two questions must have been the most difficult; they were (1) were the words spoken of the plaintiff as a doctor, and (2) did they impute to him any unfitness in his profession as a doctor? As already explained, the alleged slander would not be actionable unless the words referred to the plaintiff's conduct as a medical practitioner, and were such as would prejudice him in his profession. One would suppose that a reputation for addiction to drugs would hardly be a good advertisement for a doctor. However, the jury, after direction by the judge, quickly answered the two questions with the word "No." The next question was whether the words imputed a criminal offence. The defendant had been pressed in cross-examination with the suggestion that secretly taking drugs from the partnership supplies meant stealing; but he denied that he had intended any accusation of theft. "Any doctor," he said, "has the right to take any drugs from the partnership dispensary; it is the usual custom." The last question to the jury was whether the defendant was actuated by malice. This question, like the previous questions, having been answered by the jury in the negative, the defence prevailed all along the line. Judgment was accordingly entered for the defendant with costs.

Returning to the general reflections with which we began, we ask what good has this litigation done to the partners concerned? The plaintiff, naturally anxious to make it clear that the accusation of drug addiction was false, may have felt unwilling to forgo his legal remedy. He has lost his action and his costs will not be light. The defendant, who seems not to have expressed regret for his mistake until he was in the witness-box at the trial, has won his action but is shown to have made one singularly unfortunate diagnosis on inadequate grounds. The medical profession as a whole has perhaps not greatly suffered from the publicity which the dispute has obtained; on the other hand, it has no special reason to thank or congratulate the parties. In a situation intolerable through incompatibility of temperament, one simple remedy is a mutual agreement to dissolve the partnership. If in such contingencies the disposal of the goodwill or other partnership assets or the return of the purchase money is a stumbling-block, is there no arbitrator whom the parties can trust to give a reasonable common-sense decision? One of the risks of choosing the law-courts instead of an arbitrator is that litigation of this nature often ends in arbitration after all. Many judges, in such a case as we have described, press a settlement upon the parties rather than allow a regrettable personal squabble to occupy the time of the court. The resultant compromise may or may not satisfy plaintiff and defendant; it means that they submit in the end to the arbitration which they might have accepted in the beginning without the lawyer's bills and the publicity.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments are notified: Surg. Comdrs. J. S. Austin to *President*, for three months' post-graduate course; G. R. McCowen to *Victory*, for Haslar Hospital; and C. F. O. Sankey to *Warspite*.

ROYAL NAVAL VOLUNTEER RESERVE.

Proby. Surg. Sub.-Lts. T. Colver and J. C. Livingstone to be Surg. Sub-Lts.

ROYAL ARMY MEDICAL CORPS.

Lt. (on prob.) J. Beggs resigns his commn.
Lt. E. S. O'Sullivan relinquishes his temp. commn.

ARMY DENTAL CORPS.

Maj. L. Somerville-Woodiwis relinquishes his commn. on appt. to a permanent commn. in the R.A.F.

TERRITORIAL ARMY.

Lt. L. N. Jackson to be Capt.
W. E. Tucker to be Lt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Capt. F. W. Bury, from Active List, to be Capt.

ROYAL AIR FORCE.

Medical Branch.—Proby. Surg. Lt. H.T. Rylance, R.N.V.R., is granted a temporary commission as a Flying Officer.
Dental Branch.—Squadron Leader P. E. Brown (Maj., Army Dental Corps) relinquishes his temporary commission on return to Army duty.

COLONIAL MEDICAL SERVICE.

Appointments as Medical Officers have been made as follows: Dr. W. C. E. Diamond, Malay States; Dr. D. P. Turner, Somaliland; and Dr. J. A. Loewenthal, Uganda.

MILLER GENERAL HOSPITAL.—At the annual meeting last week it was stated that 2200 in-patients were treated in 1929, the largest number on record; there were 192,000 out-patients. The massage, electrical, Swedish remedial, and ultra-violet ray department treated 73,492 patients. Last year's financial difficulties were alleviated by the grant of £12,000 from King Edward's Fund and generous help from others.

DUDLEY GUEST HOSPITAL.—Princess Mary last week opened a new wing which constitutes the first unit of an extension scheme which, including the remodelling of some of the existing wards, will cost £50,000. The new wing, including furnishing, will entail an expenditure of between £20,000 and £25,000, most of which has already been obtained, and will provide 54 additional beds. When the entire scheme is completed the hospital will contain 189 beds.

PUBLIC HEALTH SERVICES

HEALTH OF THE CITY OF LONDON.

Statistics.—Estimated population, 10,700. Birth-rate, 7·4. Death-rate, 14·0. Death-rates per 1000 of the population: tuberculosis, 0·37; cancer, 1·4; respiratory diseases with influenza, 2·5; heart disease, 4·4. Death-rates per 1000 births: infants, 63; young (1–5 years) children, 13; mothers from childbirth, 0.

THE smallness of the figures causes the rates in the City to be liable to yearly fluctuation. Dr. W. M. Willoughby shows that an unusual proportion of the population live under rather special conditions. Thus 910 live in artisan's dwellings erected by the late Commissioners of Sewers and the Corporation. The birth-rate in these dwellings was 7·7 and the death-rate 12·1. The residents used the baths provided for them at the rate of 15 per head per annum. Registered houses let in lodgings provide for 448, with an average of 2·3 persons per tenement. Eleven blocks of self-contained dwellings provide for 1217 persons, with an average of 2·8 persons per tenement.

The attention of the Fishmongers' Company was drawn to a source of winkles suspected of causing a case of enteric fever. Of 48 samples of bread and butter, one informal sample was found to contain 40 per cent. of foreign fat. Of 26 samples of cream, one contained 95 per cent. of fat not derived from milk. In two cases samples of sauce were found to contain copper sulphate, which investigation showed to be due to defective copper pans. In two cases of adulterated milk the retailer requested that samples should be taken in course of delivery to him. The samples had to be taken by an outside authority and were certified to be genuine. Proceedings were successfully instituted against both retailers. Two milk vendors were convicted of bottling milk in the street. One of them, who had been previously cautioned, was fined £40 and the other £5. There was a decrease of 27,000 tons in imported beef as compared with the previous year. Argentina supplied 77 per cent. Mutton and lamb were about the same in amount as last year, and Argentina made good the decreases from New Zealand and Uruguay. The proportion of British diseased meat discovered in the markets rather increases than lessens, and Dr. Willoughby points out that meat inspection in this country cannot be complete until all carcasses and organs are examined at the places of slaughter, and the meat which is passed is officially stamped.

The investigation of tuberculosis in pigs from avian infection has been continued. Dr. Stanley Griffith and Mr. R. L. Cornell, M.R.C.V.S., have typed the tubercle bacilli from the lesions in pig's carcasses. Out of 95 submaxillary lymph glands successively examined, one showed the human type of bacillus, and of the others two-thirds were bovine and one-third avian in origin. Their findings corroborate those of workers in America and on the Continent, and support the recommendation that pigs and poultry should not be allowed on the same run. Experiments indicate that the more rapid the chilling of meat, especially beef, the better is the quality. A new discovery is that meat can be cooked directly from the frozen condition, and is much more tender and palatable than when cooked after thawing. The mutton-importing countries are improving their methods of examination in order to lessen the amount condemned in the London market for caseous lymphadenitis. During the year 28 naval officers were trained in meat inspection at the central markets, and the London School of Hygiene and Tropical Medicine was added to the institutions according facilities for teaching purposes. Progress continues to be made in securing clean methods in transport and handling of meat.

During the warm weather there were many complaints of offensive smells from street gullies and sewer ventilators. To deal with the former old pattern gullies are being replaced by a more up-to-date design. As regards the sewers, it has been the practice to seal the ventilators on the receipt of complaints, but in view of the serious explosion in an adjoining area in 1928 this practice has been discontinued. It is difficult, however, to obtain the permission of owners to allow ventilating shafts to be erected against their buildings. The size of the pigeon population has been again complained of and a campaign is to be conducted during the current year similar to that of 1928. Rat repression and rat proofing continue vigorously, and the brown rat is not in evidence so much as the black.

REPORTS OF SCHOOL MEDICAL OFFICERS.

—	No. on roll.	Average attendance.	Routine inspections.	Special exams. and reinspections.	Percentage of defects.
Bootle	11,628	10,443	3697	18,272	25·4
Wiltshire ..	28,104	25,245	9610	12,319	25·15

Bootle.

Dr. F. T. H. Wood draws attention to the twofold responsibility of the education authority in respect of the physical welfare of school-children: (1) to give all kinds of medical care; (2) to assist sound physical development and to afford instruction in the laws of health. In both directions the duties are being fulfilled at Bootle, where the need for assistance in carrying out the second has led to the appointment of a master and mistress of physical training. These full-time instructors, while primarily engaged in the training of secondary school pupils, have a portion of their time allotted to elementary schools; their expert knowledge should enhance the value of the training given, supplemented by out-of-school activities, such as play centres, the recently acquired playing field, school sport, and swimming. The instructors' work is of special importance in the secondary schools where the defects fall largely under the three headings of defects of teeth, defective vision, and deformities; the figures for all other conditions in Dr. Wood's table are relatively small, due no doubt to the care of the parents and the family doctor. Abnormalities are treated at the clinic for remedial exercises, which was attended by 440 children, of whom 95 were below school age. The conditions treated included mouth breathing, spinal curvature, rickets, and flat-foot, as well as more serious defects resulting from infantile paralysis and fractures. Turning to general medical care, the total number of examinations this year shows a substantial increase in spite of a slight fall in the school population. The appointment of an additional woman medical officer will make it possible to give more attention to pre-school children, which Dr. Wood regards as important in agreement with the dictum of Dr. C. J. Thomas that the infants' departments of schools are "receivers of damaged goods." It is proposed to establish two nursery schools and to make more use of the school clinics for pre-school children. A loss to the staff is the removal of Dr. A. B. Williamson, whose investigation of rheumatism has led him to conclude: (1) The percentage of rheumatism in Bootle is 1·8. (2) Girls are more liable to be affected with the choreic form of the disease. (3) The school distribution and the social status of the cases bear out the fact that the condition is most prevalent among the children of the skilled artisan class. (4) There is no evidence to suggest the existence of a so-called rheumatic type of child.

(5) There appears to be no association between rheumatism and dental decay. (6) The increased family incidence of the disease (30 per cent.) may be due (*a*) to the influence of similar environmental conditions, or (*b*) to an hereditary predisposition, or (*c*) to a carrier infection. (7) Evidence of a relationship between rheumatism and damp dwellings is inconclusive. (8) There seems to be a definite association between tonsillitis and rheumatic infection, and every child subject to attacks of tonsillitis should be observed closely for commencing signs of rheumatism. (9) Tonsillectomy appears to be justified in all non-choreic cases, but to be of most value it must be done early in the disease. The operation has no obvious effect in cases with chorea. The operation should not be performed until a previous attack of tonsillitis has completely subsided. (10) Care and supervision at a rheumatic clinic are not enough to prevent relapses. Institutional and convalescent treatment are probably the best means we have at present of combating the disease. (11) Every child presenting vague unaccountable signs of ill-health should be examined periodically with special reference to its heart. The conclusions which rest on a sound basis agree with those of similar inquiries except as to the correlation with poverty. The only obvious weakness in the service at Bootle is the absence of special schools.

Wiltshire.

Dr. C. E. Tangye's report is typical of that of a well-ordered but not exceptional county. The staff has been strengthened by the appointment of a part-time woman doctor and an additional nurse. Dr. Jean Murray is also part-time medical officer of health for a district, and this principle of combining appointments has been definitely approved by the county committees concerned. It helps to coördinate school and public health work, as does the appointment of school nurses who are also health visitors. The scheme for the supervision of all children up to school age is said to be developing, but no specific mention is made of facilities for their treatment. The medical inspectors have investigated the sanitation and hygiene of the schools and improvements have resulted. Following a lead given by the London County Council the time-honoured sloping-topped desk, which had many disadvantages, has been given up in favour of a new type of flat-topped desk. An apparent increase in the numbers of under-nourished children is not to be taken to indicate any general lowering in the standard of nutrition. There is now a regular system of treatment by giving cod-liver oil and milk, and the inspectors class children as ill-nourished if they would be likely to benefit by this addition to their diet. Cleanliness has shown striking improvement, the number of children found unclean last year being only 2032, compared with 4711 in the previous year. The decrease reflects great credit on the school nurses, the more so as no cleansing stations are provided. The nurses give demonstrations and advice to mothers, and provide special combs at cost price. Clinics for ear, throat, and nose affections have been established throughout the county. Mr. Miles Atkinson reports that recurrence of aural infection can almost always be prevented by removal of infected tonsils and adenoids if the tympanic membrane is intact at the time of operation; that cases of otorrhœa of recent origin with anterior perforations indicating disease of the throat can be cleared up by an operation on the throat without other treatment than cleansing of the ear, and that in most cases the perforation will heal; that cases with a central perforation may be dried, but the tympanic membrane is unlikely to heal; and that cases with an almost total loss of the tympanic membrane with long-standing otorrhœa, especially when it follows one of the specific fevers, are unlikely to dry without some form of mastoid operation. Aural surgeons would no doubt largely agree with him that operation, when indicated, should always be performed, but they would add that ionisation is beneficial in many cases after operation and occasionally even before it. Dental work is satisfactory; 70 per cent. of the children requiring treatment received it; in the northern area the percentage was over 82. The committee hopes for still better figures, and is recommending the appointment of another dentist and the promotion of Mr. W. H. Liebow, L.D.S., to be senior dentist in charge of the scheme. As in many other rural areas, there are no special schools, but the Wilts. authorities have made an effort to secure accommodation in residential schools.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED DEC. 6TH, 1930.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 95 (last week 160); scarlet fever, 2188; diphtheria, 1529; enteric fever, 28; pneumonia, 1010; puerperal fever, 55; puerperal pyrexia, 112; cerebro-spinal fever, 12; acute poliomyelitis, 7; acute polio-encephalitis, 1; encephalitis lethargica, 13; dysentery, 24; ophthalmia neonatorum, 93. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Dec. 9th–10th was as follows:—Small-pox, 206 under treatment, 5 under observation (last week 236 and 2 respectively); scarlet fever, 1925; diphtheria, 2163; enteric fever, 13; measles, 80; whooping-cough, 110; puerperal fever, 21 (plus 5 babies); encephalitis lethargica, 121; poliomyelitis, 1; "other diseases," 49. At St. Margaret's Hospital there were 15 babies, plus 5 mothers with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there were 2 deaths from small-pox, 3 (0) from enteric fever, 45 (2) from measles, 6 (2) from scarlet fever, 17 (2) from whooping-cough, 31 (7) from diphtheria, 49 (10) from diarrhœa and enteritis under two years, and 43 (8) from influenza. The figures in parentheses are those for London itself.

The fatal cases provisionally classified to small-pox were assigned to Wood Green U.D. and Dagenham U.D. Details of the former were given in our issue of Dec. 6th (p. 1260). The fatal cases of enteric fever were reported from Hastings, Bury, and Hull. Ten deaths from measles were reported from Liverpool, 8 from Hull, 6 from Swansea, 5 from Bristol, and 3 from Birmingham (Dublin reported 14 cases in the same week). Five fatal cases of diphtheria occurred at Birmingham and 3 at Liverpool. Diarrhœa accounted for 5 deaths at Manchester and 4 at Liverpool.

The number of stillbirths notified during the week was 281 (corresponding to a rate of 41 per 1000 births), including 43 in London.

A "PRUDENTIAL" BED.—The Prudential Assurance Company has promised an annual subscription of £500 for the endowment of a maternity bed in St. Mary's Hospital, London. The money is being given in recognition of the hospital's maternity work, "and as a manifestation of interest in the movement for better maternity services throughout the country."

"MOORFIELDS HOSPITAL" EXTENSION.—Prince Arthur of Connaught last week opened new private wards and nurses' quarters at the Royal London Ophthalmic Hospital, City-road, E., of which he is President. The block of private wards contains 17 rooms and a theatre, and 39 rooms have been added to the nurses' quarters. Including the addition of a floor to the existing building, the work has cost £39,000.

A HOSPITAL "DRAW."—For the last ten years Mr. William Charlton, a stonemason in the employment of Newcastle-on-Tyne Corporation, has organised an annual "draw" for the benefit of Newcastle Eye Hospital as a mark of his gratitude as a former patient. Last year £550 was raised in this way, but last week the police, acting upon instructions from the Home Office, stopped the sale of tickets and the "draw" has consequently been abandoned.

CORRESPONDENCE

VALUE OF RAMISECTION IN CASES OF SPASTIC WEAKNESS.

To the Editor of THE LANCET.

SIR,—In your issue of to-day Mr. Bankart, under this heading, says that "Lord Moynihan was unfortunate in his choice of the researches of Hunter and Royle to illustrate 'the somnolence of physiologists.'" Using this as preamble, he occupies two columns of THE LANCET in a dissertation upon the value of "ramisection in cases of spastic weakness," to which I quite deliberately made no reference whatever. I wrote:—

"Just as physicians, to use Sir William Osler's phrase, were 'caught napping' by surgeons who asserted the frequency and created or amplified our acquaintance with the symptoms of gastric and duodenal ulcer, and of cholelithiasis, so the physiologists have similarly had their somnolence proclaimed by the researches of Royle and Hunter, Wade of Sydney, Robertson of Toronto, Judd, Adson, Learmonth, and others, as to the sympathetic nervous system, and its influence upon maladies of men so diverse as Raynaud's disease, Hirschsprung's disease, endarteritis obliterans, and retinitis pigmentosa. Learmonth's recent investigations carry the possibilities of helpful or remedial surgery still further."

The work of Hunter and Royle, whatever may prove to be its value in the very restricted field of surgery with which Mr. Bankart is here concerned, was, as everyone should know, the inspiration of Wade in his valuable pioneer work upon the intestines, and was the direct incentive not only to the new work of the surgeons whose names I quote, but to fresh and eager anatomical and physiological inquiry in many parts of the world. It is not to Royle's early operative work, but to his fecund influence upon the surgery of the sympathetic system that I referred in the paragraph which Mr. Bankart curtailed. By so doing he has failed to appreciate the full significance both of the carefully ordered sequence of names and of the special list of diseases selected for enumeration. With wider vision than Mr. Bankart allows himself, I therefore still regard my choice of illustration as singularly happy and most appropriate.

I am, Sir, yours faithfully,

Portland-place, W., Dec. 13th, 1930. MOYNIHAN.

PASTEURISATION OF MILK.

To the Editor of THE LANCET.

SIR,—The addition of pasteurised or separated milk to the ordinary mixed diet of school-children has been proved of enormous value by the work of Corry Mann and other observers. That fact, however, does not affect the question of the true nutritional value of milk. The study of the problem as it stands at the present time reveals the fact that the most enlightened thinkers in those countries which have adopted pasteurisation as the main plank of milk selling are recognising more and more clearly that treated milk is not of equal value to fresh milk, and this becomes particularly clear when these different types of milk are given to young children; that is to say, those whose food-supply is strictly limited.

The truth of this probability is gradually emerging as the result of researches which are being carried out in the United States and in Holland. In this country, up to the present time, no comparable work has yet been done, and it is urgently required. It would seem, therefore, to be a great pity to suggest that in future Certified milk shall be the only fresh milk-supply; for in practice the cost of this milk makes it a luxury article which can be consumed only by those with substantial incomes. The adoption of such a policy, therefore, will reduce London, for instance, to a position comparable with that of New York, where not more than 2 per cent. of the total milk-supply is sold as fresh milk, and those who are in most need of it are unable to get it. In England, on the other hand, we have at present not only Certified, but also Grade A (Tuberculin Tested) milk, which is being sold in increasing quantities, particularly in the East End of London, and in many provincial towns. In the East End of London such milk is sold at a price which the working classes are obviously prepared to pay, although one hopes as time goes on it may still be further reduced from 2*d.* a quart extra, which it costs at present, to perhaps not more than 1*d.* extra, the price that is paid in one district of London, Reading, and some other provincial towns. Experience has shown that it is quite possible to put milk of this character into the house of the consumer, even in London, satisfactorily. In doing so the best interests of the consumer and of the farmer are served, for the one gets untreated milk and the other a fairer share of the monies which are paid for it. It would appear, therefore, that it is very important that we shall preserve an open market for the sale of fresh milk from licensed tubercle free herds at a reasonable price, until such time as we are satisfied that other forms of milk possess the nutritive value that all of us desire in the best interests of the health of the nation.

To pasteurise the whole milk-supply of the country is impossible, until such time as the whole population has become urban. With all due deference to the very distinguished men who have appealed for universal pasteurisation of milk except Certified milk, I would suggest that even in spite of their practical knowledge of dairy farms and the milk industry, the question should be approached with very great care and that the tampering with one of Nature's foods, except to insist on its being provided from healthy cows under perfectly clean conditions, may, with increasing knowledge be found to be putting the hands of the clock back, and eventually doing more harm than good to the health of the nation.—I am, Sir, yours faithfully,

C. MADDOCK,
Hon. Sec., The Certified and Grade A (Tuberculin Tested) Milk Producers' Association.

16, Ormond-yard, York-street, London, S.W., Dec. 15th, 1930.

To the Editor of THE LANCET.

SIR,—I welcome the letter by Lord Dawson, Sir John Robertson, and others, advocating the universal adoption of pasteurisation of milk. At one time I was doubtful as to the desirability of this course, as I feared it might militate against the general adoption of the principle of milk from tuberculin-tested cows, which I believed was the more excellent way. However, having been reluctantly forced to the conclusion that the latter principle, however ideal, is not likely to be realised, at any rate during the present generation, I now feel that universal pasteurisation of all milk other than "Certified" or "Grade A (Tuberculin Tested)" is the only

satisfactory alternative, and the sooner it comes the better. I would suggest that it would be quite feasible to make efficient pasteurisation compulsory provided sufficient notice were given to enable all milk purveyors to make the necessary arrangements and install the necessary plant. Already a very large proportion of the milk-supply of large towns is pasteurised although not always sold as such.

I am, Sir, yours faithfully,

C. KILLICK MILLARD,
Medical Officer of Health, Leicester.

Health Offices, Leicester, Dec. 15th, 1930.

To the Editor of THE LANCET.

SIR,—I am in entire agreement, so far as they go, with the signatories to the letter on pasteurisation of milk in your last issue (p. 1315), but why do they draw the line at "Certified milk"? Has not Certified milk produced undulant fever and septic sore-throat? It cannot be too widely known that no raw milk, certified or uncertified, can be regarded as safe. Improve the milk at the source by all means and all the time, but to neglect to pasteurise it is only asking for trouble. There is nothing sacrosanct about "Certified milk" and its pasteurisation will do it good. I am, Sir, yours faithfully,

J. C. G. LEDINGHAM.

Lister Institute, London, Dec. 13th, 1930.

To the Editor of THE LANCET.

SIR,—The signatories to the letter on this subject are of the opinion that the entire milk-supply—excepting "Certified milk"—should be pasteurised. It would be of great interest if they would explain what advantage would accrue to the general public if pasteurisation of Grade "A" (Tuberculin Tested) milk were made compulsory. The advantage to large wholesale pasteurising firms is, of course, obvious.

I am, Sir, yours faithfully,

D. M. CONNAN.

Public Health Department, Town Hall, Bermondsey, S.E., Dec. 12th, 1930.

HYPOSPADIAS.

To the Editor of THE LANCET.

SIR,—To the recent proceedings at the staff meetings of the Mayo Clinic, at Rochester, Minnesota (Nov. 5th, p. 315), Dr. Hugh Cabot made a communication on the plastic operation for epispadias, hypospadias, and urethral stricture; to his remarks on hypospadias I wish to refer, as the opinion expressed of surgical interference seems to me incorrect.

There is still a widespread opinion that hypospadias is not really amenable to treatment, and that, although many operations have been invented by many surgeons, all of these give such poor results that they are hardly worth doing. For example, the last case which I completed, a case of complete hypospadias with cleft scrotum, had been told by a relative, who was on the senior staff of a large metropolitan hospital, that nothing could be done for him. This attitude is unfortunate because this deformity is a very serious one. It is true that the patient can pass his urine and has complete control, but only a superficial view would regard the condition of no great consequence. To the patient it certainly is a serious disability; he is nervous lest his deformity should be observed, he cannot micturate, as a rule, in the normal way, and he feels different to his fellows. In addition there is a risk that he may drift into sexual irregularity.

It is true, that in all the cases which have come under my personal observation, that is to say, as far as I could observe, there has only been one in which the psychical outlook has been abnormal; I consider that the deplorable habits of some adult pseudo-hermaphrodites are secondarily acquired. Were it only because of this risk, the treatment is worth while. This is specially the case when there has been an error in determining the sex of the patient, who should be made to resemble externally the sex to which he really belongs when he assumes the characteristic garments.

It is very important in cases of sex error to be quite sure that there has been an error, and this will generally necessitate examination under an anæsthetic. I have had two undoubted girls sent to me for the cure of hypospadias. In one of these the labia were united posteriorly giving a very typical picture of an ordinary cleft scrotum. On dividing this union a vagina was revealed leading to a normal uterus. In both of these cases the clitoris was unusually large. In common with all surgeons I have had the gratification of seeing the pleasure of a patient after recovery from an operation, but I have never seen any class of patients whose delight has been so manifest as that in which the deformity of hypospadias has been corrected; and this even when the patient is only a little boy.

Prof. Cabot seems to share the common pessimism, which I would venture to state is not justified. It is possible by the methods which I published, first in 1913 (THE LANCET, 1913, i., 447) and later in slightly greater detail, and after fuller trial in my Hunterian Lecture (THE LANCET, 1926, i., 323), to perform an operation which is really worth while doing. In this latter communication photographs were published of adults who had been operated upon in childhood with completely satisfactory results—that is, the penis is of average size, straight or with only the slightest curve on erection, with the opening of the urethra at the end of the glans. I have operated on a good many cases since 1927 with uniform results. In no case has there been failure to restore the urethra, although in some cases secondary operations to close fistulæ have been needed.

The principle of the operation, as described in full detail in the paper quoted above, is based on Duplay's method; but before attempting to reform the urethra, the prepuce is transplanted along the sides of the penis so as to broaden the organ and provide enough tissue for the final closure. The straightening of the penis is obtained, not by dividing bands, but by dissecting up the whole of the contracted urethra. Prof. Cabot states that in the very minor cases in which the cleft in the urethra does not extend beyond the glans, no operation should be performed. This is often true, but the reason for not operating is not that the cleft cannot be closed; for, although I have had failure of union in other parts of the urethra, it is a curious fact that I have never failed to get union of the glandular part at the first attempt. The operation can be done and is worth doing at any rate in the type of case where there is stenosis of the displaced meatus, since the slitting up of this displaces the opening of the urethra a good deal farther back. It is equally possible to deal with the most advanced cases. I have operated upon four cases of sex error; two of these had been brought up as girls until they were adolescent, one till he was four years old and in one case the error had only persisted for a few months.

There is indeed no difficulty in the operation and

several surgeons could testify to their success in the procedure; of course it must be a delicate operation, requiring fine sutures and careful handling—I now use fine black silk for the mucous membrane and ophthalmic silkworm gut for the skin. I have never found it necessary, as Prof. Cabot advises, to divert the stream either by perineal or suprapubic drainage. With careful suturing and by keeping the parts moist with flavine 1–3000 union takes place readily, and, if fistulæ form, they can always be closed. The operation which I have described has this advantage that no tissue is removed and, if union fails to take place at the first attempt, it is always possible to make another in two or three months, after the scar has softened.

I am, Sir, yours faithfully,

ARTHUR EDMUNDS.

Queen Anne-street, W., Dec. 15th, 1930.

NEPHROSIS AND ŒDEMA.

To the Editor of THE LANCET.

SIR,—The article by Dr. T. Izod Bennett, Prof. E. C. Dodds, and Dr. J. D. Robertson in your issue of Nov. 8th (p. 1006) is very interesting and instructive. Some of the conclusions, however, require comment. Briefly stated, the authors present two points of importance:—

First, that lowering of the plasma protein, even when due to other than renal causes, may cause œdema.

Secondly, that the absence of renal lesions in cases with œdema resulting from extrarenal loss of protein speaks against the "diabetes albuminuricus" theory of nephrosis.

With the first point I am in hearty accord. While the material presented is not wholly illustrative of this principle, it confirms the idea which I first propounded many years ago, and which now seems to be a well-established fact.

From the second point I differ emphatically. In formulating the theory of "diabetes albuminuricus" I never stated or believed that lowering of the blood protein in itself is the cause of renal lesions. I stated solely that *the renal lesions in nephrosis were not the cause of the albuminuria*—which is a very different thing. The confusion of these authors on this point apparently arises from the attempt to correlate the work and conclusions of Barker and Kirk, who, as others have done before them, found that the repeated removal of plasma causes œdema; and, in addition, that dogs so treated ultimately show changes in the kidneys which they claim resemble the renal changes of chronic nephrosis. While this observation of Barker and Kirk may be of significance and point to the influence of nutritional deficiency upon various organs and tissues, including the kidney, *the work requires confirmation, not only in respect to the occurrence of renal lesions following plasmapheresis, but also that the lesions so produced do actually resemble the changes observed in the kidneys of chronic nephrosis in man.* Moreover, the conclusions of Barker and Kirk relative to the renal lesions have nothing in common with my views in regard to the ætiology and pathogenesis of nephrosis, particularly as expressed in the concept "diabetes albuminuricus."

Bennett and his collaborators liken the conditions obtained in their clinical cases to the plasmapheresis experiments of Barker and Kirk, but they fail to find any renal lesions; hence they say:—

"We must therefore assume that in the human subject the diminution of plasma proteins, even for a considerable time, does not produce changes in the kidney.

"The importance of this," they continue, "in relationship to the ætiology of nephrosis is, we feel, very great. The 'diabetes albuminuricus' theory ascribes the cause of nephrosis to a modification in the protein molecule rendering it permeable to the kidney, with the result that massive loss occurs in the urine. Œdema then results and the renal changes which occur have been thought to be due to the loss of plasma proteins. Unless it be argued that the mere passage of the abnormal protein through the kidney is capable of producing renal lesions, it would appear that this argument falls to the ground, since extrarenal plasmapheresis in man does not damage the kidney. This forms a strong argument in favour of the view that the kidney is at least one of the primary seats of damage in nephrosis, and that the renal lesion causes the alteration in the constitution of the plasma proteins, and not vice versa."

The loss of protein from the blood through experimental or spontaneous plasmapheresis (effusions into the serous cavities) is totally different from that resulting from excretion of protein by the kidneys. The formation of effusions (ascites), such as these authors have observed, is due either to inflammatory or local static disturbances, and the process involved is one of simple filtration of blood plasma. The proteinuria of chronic nephrosis is of a different nature and is, I believe, an instance of selective and preferential excretion. One need but compare the composition of the urinary proteins of any case of nephrosis with what Bennett, and his co-workers found in the serous effusions of their cases, and the difference becomes at once apparent. We must, therefore, assume that the proteinuria of chronic nephrosis has back of it some alteration in the biochemistry of the plasma proteins themselves.

Proteinuria occurs either as a result of renal damage or because the proteins are abnormal in character, and hence are removed as foreign substances. *Histopathology has thus far failed to account for the proteinuria of chronic nephrosis*, and the conclusion (from all the evidence presented by this disease) is wholly inescapable that this proteinuria is of extrarenal origin—due in all probability to a biochemical change in the proteins themselves. That proteins which are foreign to the body can be excreted by normal kidneys is well known. Hæmoglobinuria and albumosuria afford us two striking examples of this fact. There is some evidence also that the continued excretion of foreign protein can ultimately damage the kidney. The profound renal changes in Bence-Jones albumosuria are well recognised, and this, we know, is primarily an extrarenal disease.

The absence of kidney lesions in the cases cited by Bennett and his collaborators is as it should be. The mere loss of protein from the blood through channels other than the kidneys is not in itself sufficient cause for alteration in the kidney structure. One cannot as yet offer a satisfactory explanation for the kidney changes observed in human nephrosis. It is justifiable, however, to state that they constitute purely a secondary phenomenon and at times may be practically absent. I have recently seen demonstrated by a very competent pathologist the kidneys from a case of nephrosis in a child, which showed no more deviation from the healthy state than is generally to be seen in the kidneys in any long-continued wasting illness. It must also be remembered that in any long-continued lipæmia there may be storage of lipoid in the renal epithelium affecting the configuration of the cells. It is noteworthy that in none of the cases presented by Bennett and his collaborators was any lipæmia at hand.

If we analyse the evidence and the arguments which Bennett and his co-workers present we must conclude that these account for the occurrence of œdema, but that they have no bearing on the question of the pathogenesis of nephrosis.

I am, Sir, yours faithfully,

New York, Dec. 3rd, 1930. ALBERT A. EPSTEIN.

AN X RAY DEMONSTRATION.

To the Editor of THE LANCET.

SIR,—The publication of Dr. A. E. Barclay's Silvanus P. Thompson lecture in your last issue makes me think that some of your readers would like to be reminded that we owe to Prof. Thompson the first public medical demonstration of X rays in this country. Early in 1896 the Clinical Society of London invited him to tell the members about this new discovery. He kindly said he would, and a special meeting was held in the Society's rooms in Hanover-square on March 30th, 1896. Nearly 400 members, THE LANCET tells us,[1] were present—that is, almost four-fifths of them. The report of the Council says the meeting "was most successful, and a vote of thanks was unanimously accorded to Prof. Thompson for his great kindness." The audience was thrilled, most seeing for the first time actual prints of bones and pieces of metal. Silvanus Thompson was a prince among lecturers. I have never heard a better demonstration or attended a more memorable medical meeting.—I am, Sir, yours faithfully,

W. HALE-WHITE,
Hon. Secretary, Clinical Society of London, 1893–96.

Dec. 15th, 1930.

RESISTANCE TO TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—Dr. Burrell suggests in his Mitchell lecture that the resistance resulting from tuberculous infection is similar in nature to the tolerance acquired to drugs like morphia and alcohol, and is different in kind from the immunity to small-pox which results from successful vaccination. He concludes that it is wrong to attempt to protect by means of tubercle bacilli and that the correct procedure is to eliminate infection altogether or at least to dilute it as far as possible.

In these countries the first alternative is impracticable, so the second method—i.e., to dilute infection as far as possible—is the ideal to be aimed at. But the results which may be achieved by this latter method are exactly the results claimed by those who hold the infection-immunity-theory. And there appears to be a mass of evidence to support their views. For instance, Dr. Burrell mentions the difference in the results of infection amongst races where tuberculosis is not endemic and the results observed amongst civilised races. Also, not a single child born in Papworth Village Settlement has ever shown signs of tuberculosis, although the opportunities for juvenile infection must necessarily be very extensive. Post hoc or propter hoc, these children have acquired an unusual degree of resistance. Is it to be explained that they have merely become tolerant as the drug addict becomes tolerant? If so, this tolerance should be associated with stigmata analogous to those of the drug addict. Yet such is by no means the case. Nor has it been observed that persons who have successfully resisted infection are any the worse from the "tolerance" they have acquired. Does it not appear more likely that this resistance is, in fact, of the same nature as the immunity acquired towards other infectious diseases?

But if protection results from mild infection, one must explain why patients with mild tuberculous lesions, such as a small pleural effusion, are more liable to a recrudescence of active disease than others. Dr. R. C. Wingfield advances a very attractive hypothesis which goes far to explain this apparent anomaly. According to this theory resistance to tuberculosis is two-fold—namely, bacteriolytic and antitoxic. The bacteriolytic type brings about the death of the bacillus and terminates all its activities. The antitoxic type does not kill the bacillus but merely tends to counteract its toxic action. A person who possesses the first, or both, types is adequately protected, whereas one possessing only the antitoxic type is only partially protected, and is liable to a recrudescence of the infection.

Is it possible that the difference between the resistance to small-pox and the resistance to tuberculosis is a difference in degree, not in kind, and that the difference is merely due to the difference in the antigenic properties of the infecting material in each case?—I am, Sir, yours faithfully,

JAMES J. CONNOLLY.

Peamount Sanatorium, Co. Dublin, Dec. 15th, 1930.

[1] THE LANCET, 1896, i., 935.

OBITUARY

WILLIAM MACLEAN, M.B. Edin., D.P.H.

Dr. William Maclean, county medical officer of health for Ross and Cromarty, died at Dingwall on Dec. 10th after a brief illness. For the last 20 years he had never been robust, but had continued his work with ardour, and exercised to the last a profound influence over the development of medicine in the North of Scotland. He was educated at Dingwall and Inverness and later at Edinburgh University; in his younger days he was an accomplished classic, and always placed Gaelic beside Latin and Greek. After graduating in medicine in 1892 he went into practice as assistant to Dr. Bruce of Dingwall, and later in the old cathedral town of Fortrose. During these years was laid the foundation of his exceptional learning in prehistoric archæology. He discovered and investigated a settlement of the Mesozoic age in a cave near Rosemarkie, and to the end of his life retained a specialist's knowledge of this department. In 1908 he was appointed superintendent of the newly opened Seaforth Sanatorium, then the first institution of its kind in the North of Scotland. With this began his interest in public health, and in 1920 he succeeded Dr. Bruce as chief medical officer for the county. As an organiser of medical services he moved with ease among the developments of recent years. Few lawyers could surpass him in interpreting an Act of Parliament and his advice was sought repeatedly by the Department of Health. He was a prominent member, and for a time chairman of the consultative committee on the Highlands and Islands.

"In all gatherings of the profession," writes a colleague, "Maclean exercised a unique personal ascendency. He had the habit of stating a case with tempestuous frankness that was never in the least confused. In public speech the most direct of men, yet he made not even temporary enemies. He meddled in no controversies, and with supreme intellectual independence he would belong to no party. His experience had given him an immense reverence for the ethics of medicine. He feared the increasing mechanisation of our calling, although he was the first to test any fresh device and seemed to assimilate every modern procedure that appeared.

He was a man devoid of all pretensions. He had the secret of simplicity and cared little for his reputation and nothing at all for fame. Always one had a sense of the fascinating duality of his nature; the combination of fundamental sympathy towards the average man, with the loftiest intellectual capacity. His most characteristic moments were when discoursing upon some intricate problem that lay near his mind. It might be the origin of the Iberians, or the style of Hilaire Belloc, a clinical difficulty, a new salmon fly he had invented or a flint arrow head he had found in a field. A torrent of vivid expressions poured out like champagne. An inscrutable and charming smile followed, while he would listen without impatience to one's immature argument. Alas, that there was no Boswell to record these memorable conversations! For Maclean had a horror of dilettantism and could never be persuaded to publish.

"Estimated by ordinary achievement, his life was that of any conscientious worker. But his own peculiar contribution to the betterment of social and professional life cannot so be measured, and the tradition he left will be felt as in the years his work unfolds. For he never seemed to be old. He did not set out to influence others or to teach his assistants. They followed him instinctively and prized his example."

Dr. Maclean married Louise Fowler Grant. He leaves no family.

THE LATE LIEUT.-COL. N. S. SIMPSON, I.M.S.

Lieut.-Colonel W. G. Hamilton, I.M.S. (retd.), writes: "I should like to pay a short tribute to the memory of Lieut.-Colonel N. S. Simpson who was brutally murdered in his office at Writers' Buildings, Calcutta, on Dec. 8th. Colonel Simpson succeeded me as inspector-general of prisons in Bengal in October, 1929, after we had worked together in close association for several years. I always found him a loyal colleague and a staunch friend. He was a humane man, holding enlightened and very progressive views on the treatment of prisoners. In the summer of 1929, when he was convalescing from a severe attack of enteric fever, he studied the English prison system while on leave in this country. He kept his medical knowledge up to date and did good work in investigating the incidence of hookworm amongst the prison population of Bengal. He had a good eye for all ball games and was one of the best amateur billiard players I have known."

PANEL AND CONTRACT PRACTICE

A German Critic of Health Insurance.

Dr. Erwin Liek, a surgeon in Danzig, has written a book called "The Doctor's Mission" [1] in which he deplores the damage done to Germany by various forms of social insurance.

At present, he says, sickness insurance does not fulfil the object of its founders—namely, to treat and cure disease. On the contrary, it has become a means of obtaining doles rather than health, and the "will to be well" is everywhere undermined because a medical certificate means pay without work. The system weakens the manliness of the people and causes their physical and moral degeneration. "As soon as men and women have gratuitous medical and surgical treatment thrust upon them they are apt to search their bodies for signs and symptoms of diseases as carefully as a monkey searches for fleas." Thousands say to themselves, "As I am insured I must see to it that I receive every possible benefit I can obtain," and the case-books of panel doctors show that they are overwhelmed with ridiculous trivialities. Panel doctoring produces and carefully nourishes general neurasthenia and hypochondriasis, and two-thirds of it is superfluous. Where true disease is present "we notice immediately and without exception that the process of healing and the time of cure are greatly extended as soon as an individual who previously was uninsured has become insured under the social insurance scheme."

National insurance, in Dr. Liek's opinion, has destroyed the natural and normal relations between doctor and patient. With a private patient the doctor's only concern is to give relief and cure, but in panel work he must constantly ask himself: Is this a case of malingering? To show how grossly the system is exploited Dr. Liek quotes the following facts:—

> Of the 7,918,432 members of a group of insurance societies, 7,259,016 declared in one year that they were incapacitated through sickness and were invited to undergo re-examination after the granting of a sickness certificate by their panel doctors. No less than 198,142 immediately announced that they were well, and that no further examination was called for. A further 219,913 declared to the re-examining doctor that they had suddenly become quite well. Of the remaining number, 292,133 workers who had pretended to be incapacitated were found on re-examination to be able to work. In other words, out of the 1,259,016 nominally incapacitated, no less than 710,188, or 56·5 per cent., were quite able to work.

The sickness insurance organisations become mere dole payers as soon as a period of unemployment begins. "In a little town known to me," says Dr. Liek, "ten railway workers were dismissed on a certain day. Out of these ten men no less than nine were immediately certified as incapacitated by illness by their panel doctors. A friend of mine, a manufacturer, had to dismiss 50 women workers. During the next few days 49 of them received the certificate that they were incapacitated by illness which enabled them to draw sickness pay."

As at present organised sickness insurance "does shoddy work, is inefficient, and is at the same time expensive." In Danzig 7 per cent. and in Berlin 6 per cent. of the worker's income is expended on this alone. In 1927 the cost of the scheme worked out at £4 3*s*. per head (or including dependents £2 8*s*.). This amount is far too high. "I do not think that many uninsured civil servants and professional men are prepared to pay year by year 7 per cent. of their income to doctors and chemists." The expenditure on the huge bureaucratic organisation is gigantic. According to the *Ärztliche Mitteilungen* there are in Germany 29,403 insurance doctors to cure the insured sick, and no less than 27,000 officials in the employ of the insurance organisations. Moreover, the spirit of bureaucracy has invaded medical practice.

> "Having to attend impossibly large numbers, doctors become accustomed to doing rush work, and they lose the capacity and inclination to examine and treat their patients with conscientious care. After all, the question of curing the patient is less important than that of carrying out the regulations of the organisation which pays the doctor! A large number of insurance doctors consider it their principal duty to fill up forms for official use, keep books, &c."

If there were no social insurance free competition among medical men would lead automatically to

[1] The Doctor's Mission: Reflections, Reminiscences, and Revelations of a Medical Man. By Dr. Erwin Liek. Translated with an introduction by J. Ellis Barker. London: John Murray. 1930. Pp. 276. 6*s*.

success among the able and competent. But "the possibility of making a living by panel practice induces many to study medicine who do not feel the call to enter the profession. It has created medical profiteers and shopkeepers."

Dr. Liek does not believe that the general improvement of the national health is due to national sickness insurance. "Politicians and doctors," he says, "live under the illusion that they have brought about certain improvements for which, as a matter of fact, they are not responsible." He quotes Dr. Stappert as follows:—

"Every day the flood of men and women who clamour for sick-pay is rising. This flood beats ever more strongly against the wall of the medical profession, and doctors must spend their strength, energy, and ability to resist the flood. Otherwise they will be overwhelmed. The social insurance system is rotten to the core, and the edifice would have collapsed long ago, had it not been for the unselfishness and conscientiousness of the medical men."

Under such circumstances, Dr. Liek says, it is incomprehensible that the State continues enlarging the scope of social insurance from year to year. "I am sure that all the social insurance schemes were put forward with the best intention in the world, and they would have fulfilled their object if all men were animated by unselfishness, love of their neighbours, joy in their labour, love of truth, &c. As long as men remain men of the type we know, the selfishness of the individual will prevail over his higher sentiments and will nullify the aims of philanthropists and legislators who devised these schemes."

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

NURSES' WAGES AND HOURS.

IN the House of Commons on Dec. 10th Mr. BROCKWAY asked leave to bring in a Bill to lay down minimum wages and maximum working hours for the nursing profession. He said there was in the press at present a discussion as to the reason why the number of recruits to the nursing profession was falling. He suggested that one reason was the effect of the conditions under which the members of the profession were employed. In 1927 a very representative conference considered the question of medical organisations, hospitals, and approved societies, over which the present Minister of Pensions (Mr. Roberts) presided, and the opening address was delivered by the present Prime Minister. In that address Mr. MacDonald used these words: "Our object is to improve the conditions of the nurses. The work is onerous, and because they have given their services with such extraordinary devotion in the past no one has any right to assume that much need not be done to show our gratitude, not merely in words, but in a way that will materialise to their advantage." This Bill was an attempt to give effect to those words. In connexion with that conference a report was issued based on a questionaire which had been answered by 138 hospitals, poor-law infirmaries, district nursing associations, and he was assured by authoritative nursing organisations that the facts in the report were substantially accurate. It was on those facts that he based his case to-day. His Bill would apply to two categories in the nursing profession; in the first place, to the nurses employed by hospitals and in similar institutions, and, in the second place, to the large number of women employed as district nurses. The minimum wages and maximum hours which he proposed were those already in operation in the best hospitals and institutions, and therefore the proposals in the Bill were practicable. In some hospitals a 44-hour working week was in operation; in others, the week was one of 66 hours, an average of 11 hours. In cases where night duty was performed, the working week was sometimes one of 84 hours, or six shifts of 14 hours. But in many cases the 12-hour night duty was common. Of particular importance in this connexion were the probationers, who did a great deal of the work of the hospitals and were simultaneously students and had to prepare for examination. The Bill proposed that for all nurses there should be a minimum working week of 48 hours, except in cases of emergency, where the time should be made up at a later period. So far as wages were concerned, the maximum wage of £40 per year was now paid to some probationers, £75 to nurses, and £85 to sisters. His proposal was that those figures, already paid in the best hospitals, should become the minimum for all hospitals. Again, the need for legislation of this kind was illustrated by the fact that in some hospitals the salary for probationers was actually as low in the first year as £1 a month, or 4*s*. 8*d*. a week; in the second year £16; and, in the third year, £20. In some cases the nurses were only paid £30 a year after three years' training, and sisters were only paid £40 a year not only after three years' training but many years' service as nurses. He suggested that in those cases the rates for the probationers should be a minimum of £40 in the first year; £50 in the second; and £60 in the third. For nurses they should begin at £75, rising in the second year to £80. For sisters the rates should be £85, rising within five years to a minimum of £100. In the case of district nurses he suggested that the minimum rate should be £85, rising by £5 annually to £100, where board, lodging, laundry, and uniform were provided, and £185, rising by £5 annually to £200, where these were not provided. Nurses were performing a great service to the whole of the community. The least the community could do was to save them from working in a sweated profession.

Leave was granted, and the Bill was brought in amid general cheers.

UNEMPLOYED PERSONS AND HEALTH INSURANCE.

On Monday last in reply to a question whether those persons whose insurance lapsed at the end of the present year as a result of prolonged unemployment would be enabled to continue drawing benefit until legislation was passed, Mr. GREENWOOD (Minister of Health) referred to the terms of a financial resolution in connexion with the National Health Insurance (Prolongation of Insurance) Bill, which reads as follows:—

"That it is expedient (*a*) to amend the sub section substituted by the National Health Insurance Act, 1928 (hereinafter referred to as 'the Act of 1928'), for Subsection (3) of Section 3 of the National Health Insurance Act, 1924 (hereinafter referred to as 'the Act of 1924'), by providing that a person who has, under the said substituted subsection or under that subsection as applied by the regulations made under Section 23 of the Act of 1928, been treated as an employed contributor insured under the Act of 1924, shall continue to be so treated until Dec. 31st, 1931, if he satisfies the condition contained in paragraph (*a*) of the said subsection and also the following condition, that is to say, if he proves within the prescribed time that throughout the year immediately preceding the end of the period during which he was by virtue of the said substituted subsection treated as an employed contributor insured under the Act of 1924, he was at all times when not employed within the meaning of the Act of 1924, either available for but unable to obtain employment within the meaning of the Act of 1924, or incapable of working by reason of some specific disease or bodily or mental disablement of which notice was given within the prescribed time; (*b*) to authorise the payment out of moneys provided by Parliament—(i) of a

sum equal to 36 contributions (at the rate of 9*d.* in the case of a man and 8½*d.* in the case of a woman) in respect of every person to whom this resolution applies, such sum to be paid or credited to the fund or account out of which the benefits to which that person is entitled are defrayed; and (ii) of the additional cost of benefits under the Act of 1924, and the expenses of administration of those benefits (so far as such cost and expenses are payable out of moneys provided by Parliament) consequent on the provisions of paragraph (*a*) of this resolution."

Mr. GREENWOOD said an agreement had been arrived at which would enable the Bill to become law this week. The purpose of the money resolution was to retain in insurance a number of people who under the existing law and regulations would cease to be in insurance for health insurance and widows' and old age pensions at the end of this year. The Government desired to retain them in insurance at the expense of the Exchequer.

The resolution was agreed to.

SLAUGHTER OF ANIMALS BILL.

In the House of Commons on Friday, Dec. 12th, Lieut.-Colonel MOORE, in moving the second reading of the Slaughter of Animals Bill, said its object was to ensure that all animals slaughtered in slaughter-houses and knackers' yards in England, whether for human food or otherwise, should be humanely killed. It provided that all animals should be instantaneously killed or stunned by a mechanically operated instrument, and provided that all slaughtermen should be licensed so that only competent and reliable men should be engaged in the work. There were provisions for the proper inspection of slaughter-houses and knackers' yards, and it provided that Jews and Mahommedans should be permitted to slaughter animals in accordance with their religious beliefs. The Ministry of Health issued some years ago model by-laws for slaughter-houses providing for the use of mechanical instruments which might be adopted voluntarily by local authorities, and 930 local authorities had adopted those model by-laws which were incorporated in the Bill and applied to the whole country. He had been overwhelmed with letters from all sections of the community expressing surprise that the humane slaughter of animals was not universal, and encouraging him in his efforts to make it so. Every year between 14,000,000 and 16,000,000 animals were killed for human food. The great advantage of the mechanical killer was that it had a captive bolt which was released by the pressure of the cartridge and penetrated the brain of the animal. The type and length of the bolt depended on the type of animal to be slaughtered. There was little strength needed; no skill, but merely ordinary care. The carcass of the animal was undamaged, and the cost was inappreciable. Thousands of practising butchers had voluntarily adopted the system. The Bill exempted Jews and Mahommedans as the promoters did not think it wise to interfere with the fundamental religious views of any race.

Lieut.-Commander KENWORTHY seconded the motion for the second reading.

A BLOCKING AMENDMENT.

Mr. LANG moved "that this House declines to give a second reading to the Bill until the whole subject of the slaughter of animals has been fully investigated by a Select Committee of this House." He said that either the Jewish method of killing animals was humane or it was not—if it was not it was a very serious thing to give exemption under this Bill to one religious community. He was not at all satisfied that the case for the Bill had been made out. When there was a striking difference of opinion among eminent scientific people who had no axes to grind in the matter he thought that the proper course was to subject the matter to further investigation by a Select Committee.

Mr. BLINDELL seconded the amendment.

Mr. GREENWOOD (Minister of Health) said that a substantial and growing number of local authorities had adopted humane slaughter. There was also a change in the attitude of those who represented the meat trade. He warned the promoters, however, that if the Bill got a second reading they would be only at the beginning of their troubles. He suggested that they should set about arriving at an agreed basis which would render the Bill more or less non-controversial.

"THE ABSOLUTE MINIMUM."

After further debate,

Sir R. GOWER said that before the Bill had been presented to the House careful consideration was given by its promoters to all its provisions, and it was felt that those provisions represented the absolute minimum. He was profoundly disappointed at the statement of the Minister of Health, and he appealed once more strongly to the Government to give the necessary facilities for the passage of the Bill. The promoters were prepared to face every difficulty, and if it appeared that they could not get the whole of the Bill they would consider any suggestions which might be made. A short time ago it was stated in THE LANCET that the medical officer of health of Bloemfontein in South Africa reported that many thousands of pigs had been slaughtered by the humane killer, and in no case had there been any complaints as to insufficient bleeding or the keeping quality of the meat. Not very long ago, too, the medical officer for health for Brighton stated in his report that a large number of pigs were slaughtered there by means of the humane killer, and that there was very little evidence of blood-splashing.

MEDICAL SUPPORT TO THE BILL.

Dr. HASTINGS said the physiology of human beings was very similar to the larger animals used for food. Members of the medical profession learned a very long time ago that when they wished to do anything unpleasant to any of their victims it paid them well to render them anæsthetic, and that was the great point in this Bill. Many of the speakers in that discussion had omitted to take account of the fact that the whole question was one of rendering the animal unconscious as quickly as possible. What did it matter how long the animal bled if it was unconscious? He was quite sure that it was much easier to hold a pistol to an animal's head than to wield a weapon which very much resembled a pickaxe, and strike with it an exact point on the skull. Another question which had been discussed was that of blood-splashing. He did not think there was any doubt from the facts that had been brought forward that day that blood-splashing did occur in carcasses killed by all methods; but he suggested that the cause of blood-splashing was mainly fear. They knew very well physiologically that fear had the effect of letting into the blood stream the secretion of the adrenal gland, and one of the effects of this was to raise the blood tension and therefore make bleeding occur more easily. Sufficient stress had not been laid on the importance of licensing those who had to slaughter animals. It was not an easy thing to slaughter an animal, particularly with the knife. Only those who were really skilled should undertake these operations. He would support the Bill.

Dr. LITTLE said he wished to emphasise the point that there was more bungling likely to occur in killing an animal with the poleaxe than with the humane killer, especially if it were in expert hands, and if they could reduce the amount of suffering which was caused by bungling it was their duty to do so. He would emphasise the point made by the Minister of Health as regarded the importance of public feeling in a matter of this kind. In the case of experiments on animals most careful regulations were insisted upon to prevent pain and suffering. The President of the College of Physicians, or the College of Surgeons, if they desired to make an experiment on an animal, were obliged to take, and

quite rightly, the very strictest measures to avoid pain. This method of killing had been demonstrated to be the quickest way of achieving unconsciousness. One of the most eminent physiologists of this generation pointed out that the animal became unconscious before the impact of the blow could be properly effected. That was a statement which should have great weight indeed, as it made it obvious that this was the method which ought to be chosen. In this matter they must take into consideration public opinion and remove a reproach which was a serious blot on the country at the moment.

Lieut.-Colonel FREMANTLE said there was something left to be said on this Bill from the point of view of the professional man who had had to look into the question as a medical officer of health. He had seen the big slaughter-houses in Paris and in various parts of Germany, and had noted the contrast between those big abattoirs, where everything was done so well, and the slaughter-houses in this country. It was for that reason among others that he welcomed this Bill as a step in the direction which they had been keen on taking for so many years. By sending the Bill to a standing committee they were not prejudicing the case of the bacon-curers, but by sending the Bill to a Select Committee they would tie up the case interminably against the general feeling of the House, and he believed the general feeling of the health profession, scientific men, and humane people.

AMENDMENT WITHDRAWN.

Mr. LANG said in view of the statements they had heard that afternoon from the Minister of Health and others, that only an agreed measure was likely to reach the Statute Book, he would not press the matter to a division, but would withdraw his amendment in the hope that such measure of agreement might be arrived at.

The Bill was read a second time and committed to a Standing Committee.

HOUSE OF COMMONS.

WEDNESDAY, DEC. 10TH.

Tuberculosis in the Navy.

Viscountess ASTOR asked the First Lord of the Admiralty the number of cases of tuberculosis in the Royal Navy as a whole for each year in the last ten years.—Mr. G. H. HALL replied: The numbers of cases of tuberculosis, pulmonary and non-pulmonary, in the Royal Navy as a whole for each year in the last nine years were as follows: 1921, 284; 1922, 224; 1923, 173; 1924, 204; 1925, 262; 1926, 222; 1927, 193; 1928, 188; 1929, 272. I regret that the figures for ten years are not available.

Poisoning of Sweets.

Mr. FREEMAN asked the Minister of Health whether his attention had been called to a number of recent cases of the poisoning of sweets, notably by arsenic; and whether he intended holding any inquiry into the matter.—Miss LAWRENCE replied: My right hon. friend is aware of the cases referred to, and he understands that the local authority concerned has taken suitable action, including the prosecution of the persons responsible. Officers of my department have kept in close touch with those of the local authority in the course of the investigations, and my right hon. friend does not think it necessary to hold any special inquiry into the matter. I may add that my right hon. friend is in consultation with the Secretary of State on the question of legislation to guard against the danger of the accidental misuse of poisons.

THURSDAY, DEC. 11TH.

Law of Sweepstakes and Lotteries.

Mr. DAY asked the Home Secretary whether, in view of the present condition of the law on the subject of sweepstakes, lotteries, and raffles, he would consider the appointment of a committee for the purpose of recommending legislation with a view to clarifying the position.—Mr. CLYNES replied: Under the existing law, public lotteries of whatever form and whether promoted in this country or not are illegal in this country, and while that is the case the authorities have no alternative but to carry out the law. Under the Customs Acts, advertisements or notices of lotteries are contraband, and upon importation, by whatever means, can be dealt with accordingly. The sending of lottery tickets or advertisements through the post is also prohibited, and letters suspected of containing correspondence relating to lotteries may be opened. The Statute provides heavy penalties for breaches of the law. If I were satisfied of the existence of any general demand that I should look into the question of setting up a committee to consider, as a practical question, the conditions and safeguards which would be necessary and appropriate if lotteries were to be permitted as a method of raising money for approved public purposes, I should be prepared to consider what would be the best method of giving effect to such a demand.

The Sale of Arsenic.

Sir GEORGE PENNY asked the Home Secretary whether, in view of the opinion expressed by coroners, he would consider a revision of the regulations controlling the sale of arsenic to the public so that, if this poison was indispensable to agriculture, the licensed vendors, such as corn merchants, ironmongers, &c., would be made to comply with the same regulations as registered chemists.—Mr. CLYNES replied: I hope that a Bill for the purpose of simplifying and strengthening the law relating to poisons may shortly be introduced into Parliament. I would, however, remind the hon. Member that the existing provisions of the law relating to the sale of arsenic and of poisons generally apply equally to registered chemists and the licensed vendors to whom he refers. The licensed vendors are, in addition, subject to the regulations made by Order in Council under Section 2 of the Poisons and Pharmacy Act, 1908.

Medical Examination of School-children.

Dr. HASTINGS asked the President of the Board of Education the approximate time per capita taken in the medical examination of school-children.—Sir CHARLES TREVELYAN replied: When children are being examined at routine medical inspections, about six minutes is occupied on the average in the inspection of each child. Children discovered or suspected to be suffering from defects requiring more detailed investigation are referred for subsequent examination, and the time then given to any particular child, of course, varies with the nature of the defect.

Epidemic in the Meuse Valley.

Colonel HOWARD-BURY asked the Minister of Health whether, in view of the fact that 65 deaths had been caused in Belgium by sulphuric acid fumes and fog, he was taking steps to see that a similar result did not happen from a combination of fog and sulphuric acid fumes from the Battersea power station being erected in the heart of London.—Mr. GREENWOOD replied: The Belgian Ministry of the Interior have instituted an official inquiry into this matter, and I have asked to be favoured with a copy of the report. Until the facts are ascertained, I know no grounds for assuming that sulphuric acid or any other fumes are associated with the cause of the outbreak, but, as regards the Battersea power station, I would draw attention to the report presented to Parliament last month by the Minister of Transport in which it is stated that the committee presided over by the Government chemist are satisfied that it is practicable to instal there a plant which will reduce the emission of sulphur fumes to a negligible quantity.

MONDAY, DEC. 15TH.

Male Nurses in Mental Institutions.

Mr. DAY asked the Minister of Pensions the number of the male nursing staff employed in the institutions under his control dealing in cases of mental and severe nervous disorder who had not the qualifications of a certificate for dealing with such cases.—Mr. J. A. PARKINSON (Lord of the Treasury) replied: There are some 165 orderlies employed in the institutions under the control of the Department which provide treatment for mental and severe nervous affections. Of these 33 are in possession of a certificate. The bulk of the remainder have, however, had ten years' experience and upwards in mental institutions. It may be pointed out that a majority of the patients in the institutions referred to are not certified cases.

English Tests of Spahlinger Vaccine.

Mr. HURD asked the Minister of Agriculture whether his attention had been called to the tests by an expert and impartial committee in Norfolk of the Spahlinger vaccine as a preventive against bovine tuberculosis; and whether his department was making further inquiries.—Dr. ADDISON replied: Captain Richard Buxton has been good enough to present me with a summary of the report of the interesting experiments with M. Spahlinger's vaccine which have been carried out on his farm in Norfolk. I have suggested to him, in the interest of all concerned in the problem, that he should arrange for a complete test to be made by and under the

independent control of recognised authorities who are experienced in research in this disease.

War Pensioners' Claims.

Brigadier-General MAKINS asked the Minister of Pensions the total number of claims submitted outside the seven years' limit up to Nov. 30th, 1930, since his announcement in regard to this matter in November, 1929; how many of these applications had been considered and dealt with; and how many of them had received favourable consideration.—Mr. PARKINSON replied: Some 20,300 fresh claims have been submitted during the period referred to, of which rather more than 18,000 have been considered. In 982 cases the claims have been recognised either by way of medical or surgical treatment, or by some form of pecuniary compensation.

Independent Medical Authority and Pension Claims.

Mr. STEPHEN asked the Minister of Pensions in how many disputed cases there had been reference to an independent medical authority, in accordance with the new arrangements made since he took office.—Mr. PARKINSON replied: The number of such cases up to the end of last month was 251.

Advertisements of Hall's Wine.

Dr. HASTINGS asked the Postmaster-General whether his attention had been called to the fact that advertisements for Hall's wine were contained in books of stamps sold at post offices; whether, in view of the fact that this wine contained a large percentage of alcohol and could only be retailed by those holding a licence, and that it was without medicinal value because the small quantity of meat juice that it contained was rendered inert by the action of the alcohol in it, he would take steps to see that such advertisements were no longer accepted.—Mr. LEES-SMITH replied: In accordance with the Government's general decision, no advertisement of alcoholic liquor is now accepted for inclusion in post office books of stamps; and this decision applies to advertisements of Hall's wine. Any such advertisements appearing in stamp books now on sale represent issues printed before the decision took effect.

Shell Shock and War Neurasthenia.

Mr. PRICE asked the Minister of Pensions how many persons suffering from shell shock and war neurasthenia were in receipt of pensions at the present time; and whether, in view of the ill-effect on general health of worry on the minds of these persons as to the certainty of their pensions continuing, he would consider making these pensions permanent.—Mr. ROBERTS replied: The total number of officers and men at present in receipt of pension on account of neurasthenia is about 32,000. It is the policy of the Ministry to make final awards in all suitable cases, and, as a matter of fact, in 28,000 of the total number of cases referred to the awards have been made permanent.

War Pensioners and Attributability.

Dr. MORRIS-JONES asked the Minister of Pensions if he was aware that in certain cases pensioners who had been given the entitlement of attributability for their pensionable conditions were dealt with on an aggravation basis, although notified as attributable, and were thus deprived of their right of appeal to the pensions appeal tribunal on entitlement; and whether he would inquire into the matter.—Mr. ROBERTS replied: In no case is any change of entitlement affecting pension made, which could form the subject of appeal, without such right of appeal being given.

TUESDAY, DEC. 16TH.

Vivisection Experiments.

Lieut.-Commander KENWORTHY asked leave to introduce a Bill to prevent the application of public money to vivisection experiments.

Major CHURCH opposed the Bill.

Leave to introduce the Bill was refused by 170 votes to 156—majority against, 14.

Scottish Prisoners and Insanity.

Mr. STEPHEN asked the Secretary for Scotland whether he proposed to take any steps to deal with the position of persons charged with an offence, but incapable of pleading through insanity, who had afterwards recovered and been sane for years.—Mr. ADAMSON replied: According to existing practice the cases of individual inmates of the Criminal Lunatic Department are considered periodically. In consultation with my right hon. friend, the Lord Advocate, I am examining the existing procedure with a view to ascertaining whether any modification of it is desirable.

Mortality and Sickness among Seamen.

Mr. THOMAS LEWIS asked the President of the Board of Trade whether, in view of the mortality and sickness experienced amongst seamen, he intended, at an early date, to take steps to secure an improvement in the accommodation provided for the crews of the mercantile marine.—Mr. W. GRAHAM replied: An investigation is being made to determine what are the true death- and sickness-rates amongst seamen as compared with other occupations. The accommodation on board ship, which is frequently inspected by the surveyors of the Board of Trade and by the local health authorities, has recently been engaging the special attention of the Board of Trade, of the Joint Committee of the Board of Trade and Ministry of Health, and of the Shipping Federation. I hope that agreed proposals improving the general standard of crew accommodation will result from these inquiries.

Radium Supplies.

Commander BELLAIRS asked the Minister of Health, in view of the undertaking of the last Government to refer the question of radium supplies and prices to the League of Nations, what progress had been achieved; and whether the League had inquired into both the prices and supplies from the Union Minière in Belgian territory.—Mr. GREENWOOD replied: I am not aware that any undertaking such as is suggested by the hon. and gallant Member was given, but I am informed that proposals for investigation of these matters were made at the last session of the Health Committee of the League of Nations, and will be further considered at the next meeting of that Committee.

MEDICAL NEWS

Royal College of Surgeons of England.

A meeting of the Council of the College was held on Dec. 11th, with Lord Moynihan, the President, in the chair.

Mr. Russell Howard (Surgeon to the London Hospital) was re-elected, and Mr. E. C. Hughes (Assistant Surgeon to Guy's Hospital) and Mr. L. E. C. Norbury (Surgeon to the Royal Free Hospital) were elected Members of the Court of Examiners.

Diplomas of Membership were granted to Marjorie Low Royal Free); Marjorie N. Lunn (Royal Free); E. Mary Newham (Royal Free); and David Ockman (Manchester).

The Fellowship of the College was conferred on the ollowing:—

Gladys Maud Sandes, Royal Free; John Maxwell Clarke,)tago and St. Bart.'s; Walter Graham Scott Brown, St. Bart.'s; annie Pichaimuthu, Madras; James Harold Saint, Durham and ondon; Reginald Cyril Tatham, Middlesex; Norman William olton, Manchester; James Cecil Hogg, Cambridge and St. art.'s; Walter Stanley Chapman, Univ. Coll.; Ralph Marnham, ambridge and St. George's; Basil Roy Sworn and Richard lood Metcalfe, St. Thomas's; Derek Gordon Bown, Guy's; rederick Herman Aitken Walker, Cambridge and St. Bart.'s; bdulla Ali, Cairo and London; Prem Nihar Ray, Calcutta nd St. Bart.'s; Robin Sturtevant Pilcher, Univ. Coll.; Wilfred ynes, Leeds and St. Bart.'s; Judson Tynedale Chesterman, ristol and Guy's; Max Roslyn Ernst, St. Bart.'s; Eric Newton ardle, Liverpool and London; Hussein Yousri, Birmingham and King's Coll.; Motibhai Desaibhai Patel, Guy's and London; John Roydon Peacock, Cambridge and St. George's; Philip Joseph Ganner, Birmingham and London; Norman Rupert Barrett, St. Thomas's; Alfred Charles Fisher, Bristol and Guy's; William Eldon Tucker, Cambridge and St. George's; Harold Strang Taylor-Young, Cambridge and St. Thomas's; Cecil Edwin Corrigan, Manitoba and St. Bart.'s; Alan Doyle Everett, St. Bart.'s; Frank Wild Holdsworth, Cambridge and St. George's; Raymond Purvis, St. Thomas's; Terence John Millin, Dublin and Guy's; Frederick Ross Stansfield, Leeds and St. Bart.'s; Francis Florence D'Arcy, Melbourne and Guy's; Sydney Gordon Davidson, Aberdeen and Guy's; David Imrie Fitzpatrick, Melbourne and Guy's; Edward Charles Bell Jones, Melbourne and London; James Fong Kemble, Sydney, Guy's and St. Bart.'s; Kenneth Lumsden, Edinburgh and St. Bart.'s; Edward Gerard MacMahon and Norman St. Clair Mulhearn, Sydney and Guy's; Lloyd Reath Olver, Sydney and St. Bart.'s; Kenneth Charles Trineman Rawle, Sydney and Guy's; Cecil Ashley Marshal Renou, Melbourne; Vithal Nagesh Shirodkar, Bombay and Guy's; George Robin Adlington Syme, Melbourne and Guy's; Jacob Taliat, Bombay and London; and Samuel Aird McCleery Thompson, Belfast and London.

Three other candidates were successful in the recent examination, but have not yet complied with the regulations—namely, Alfred Richard Denis Pattison, Kenneth Hampden Pridie, and Israel Preiskel.

The Licence in Dental Surgery was granted to Pondichery Somasunder, M.R.C.S. (Madras and London).

At the request of the Canadian Medical Association it was

decided to hold a primary examination for the Fellowship in Canada in 1931.

At the primary examination for the Fellowship, held from Dec. 2nd to 13th, 178 candidates presented themselves, of whom 57 were approved. The following are the names and medical schools of the successful candidates:—

S. C. Alagappan, M.B., Madras Univ. and Middlesex; A. V. Baliga, L.C.P.S., Bombay, King's Coll., and Middlesex; F. H. Bentley, M.B., Manchester; A. Birnbaum, London; G. W. Black, M.B., Middlesex; H. A. Body, M.D., Melbourne and Middlesex; S. G. Browne, King's Coll.; M. Bryer, M.R.C.S., St. Bart.'s and Middlesex; E. L. Button, M.B., Otago and St. Mary's; E. G. L. Bywaters, Middlesex; F. A. d'Abreu, M.B., Birmingham, St. Mary's, and Middlesex; D. O. Davies, St. Bart.'s; G. Y. Feggetter, M.B., Durham; S. Y. Feggetter, Durham; G. S. Ferraby, M.B., King's Coll. and St. Mary's; W. C. Gissane, M.B., Sydney Univ.; J. Grocott, Guy's; J. D. Hay, Cambridge; F. J. Hector, M.R.C.S., Bristol and Middlesex; J. C. R. Hindenach, M.B., Otago and Middlesex; F. K. S. Hirschfeld, M.R.C.S., Melbourne, Oxford, and London; Eva Ho-Tung, M.B., Hong-Kong and King's Coll.; W. E. A. Hughes-Jones, M.B., Melbourne Univ.; Muriel S. Hulke, M.B., Univ. Coll.; E. A. Hunt, M.B., Toronto Univ.; J. Kelley, M.B., Cork; H. B. Lee, St. Bart.'s; G. J. Lillie, M.B., Melbourne and King's Coll.; E. W. Lindeck, M.B., Camb. and Univ. Coll.; W. S. McKenzie, Camb. and Middlesex; R. J. W. Malcolm, M.B., Sydney and Middlesex; G. S. Malik, M.B., Univ. Coll.; B. R. Medlycott, M.B., Guy's; T. W. Mimpriss, M.R.C.S., St. Thomas's; W. F. Nicholson, Camb. and Middlesex; J. A. R. O'Regan, M.B., Otago Univ.; R. C. Percival, Sydney and London; K. M. A. Perry, Camb. and London; H. A. Phillips, M.D., Melbourne and Middlesex; A. K. Price, St. Thomas's; R. B. Pringle, M.R.C.S., Camb. and St. Thomas's; R. W. Raven, M.R.C.S., St. Bart.'s; R. K. Reeves, M.B., Adelaide and London; L. C. Rogers, M.R.C.S., Middlesex; L. S. Rogers, M.B., Otago and St. Mary's; G. F. Rowbotham, M.R.C.S., Manchester and Middlesex; B. W. Rycroft, M.D., St. Andrews and Middlesex; R. Shackman, St. Bart.'s; M. Silverstone, M.B., Liverpool Univ.; C. G. Sinclair, M.B., St. Bart.'s.; V. A. J. Swain, St. Bart.'s; S. M. Thompson, Camb. and King's Coll.; T. M. Tyrrell, Camb. and St. Thomas's; F. Welsh, M.B., Birmingham Univ.; W. K. Welsh, Toronto Univ.; I. G. Williams, Middlesex; and H. R. I. Wolfe, St. Thomas's.

University of London.

At recent examinations the following candidates were successful:—

THIRD EXAMINATION FOR M.B., B.S.

Honours.—M. P. Ellis (*a*), Univ. Coll. Hosp.; R. A. Fitzsimons (*d*), Charing Cross Hosp.; Beatrice M. Joly (*a*), L.S.M.W.; G. L. Jones (*c*), St. Thomas's Hosp.; Michael Kremer (*a*), Middlesex Hosp.; D. W. C. Northfield (*d, e, University Medal*), Guy's Hosp.; and A. W. M. Rooke, Univ. Coll. Hosp.

(*a*) Distinguished in Medicine. (*d*) Distinguished in Surgery.
(*c*) Distinguished in Forensic Medicine.
(*e*) Distinguished in Midwifery.

Pass.—E. F. Barnardo, London Hosp.; F. G. L. Barnes St. Bart.'s Hosp.; Jamshed Nusserwanji Bhada, Univ. Coll. Hosp.; W. L. M. Bigby, Guy's Hosp.; J. G. Bowen, London Hosp.; W. E. R. Branch, Univ. Coll. Hosp.; Dora E. Brockbank, L.S.M.W.; F. E. Camps, Guy's Hosp.; W. H. P. Cant, Univ. of Birmingham; A. G. Carmichael, Middlesex Hosp.; Rosa E. Chamings, L.S.M.W.; Arnold Clark and E. E. Claxton, St. Bart.'s Hosp.; F. S. Cliff, Univ. Coll. Hosp.; W. D. Coltart, St. Bart.'s Hosp.; T. V. Cooper, Westminster Hosp.; Catherine B. Crane, L.S.M.W.; H. J. Croot, Guy's Hosp.; Marian J. Cunning and Catherine Day, L.S.M.W.; C. E. Dolman, St. Mary's Hosp.; D. G. Evans, Univ. Coll., Cardiff, and Univ. Coll. Hosp.; J. D. S. Flew, Univ. Coll. Hosp.; Beryl M. Furlong, Kamala Ghosh, Olive N. Grant, and Mary W. Hamlyn, L.S.M.W.; Flora Hargreaves, Univ. Coll. Hosp.; Lettice P. Harrison, L.S.M.W.; K. W. D. Hartley, St. Bart.'s Hosp.; Honor E. C. Harvey, L.S.M.W.; A. S. Hatch and Katherine M. Heberlet, Univ. Coll. Hosp.; P. Y. Hicks, St. Thomas's Hosp.; R. E. Holmes, London Hosp.; E. B. Jackson, Univ. Coll. Hosp.; H. B. Jackson, Middlesex Hosp.; E. K. Jones, London Hosp.; J. L. F. King and G. C. Knight, St. Barts.' Hosp.; H. J. Knight, St. Mary's Hosp.; Nellie I. Lanckenau and L. J. M. Laurent, Univ. Coll. Hosp.; I. W. Lazarus, London Hosp.; Arthur Levy, St. Thomas's Hosp; Annie M. McGrath, Westminster Hosp.; Joyce MacInnes, L.S.M.W.; A. H. MacG. McMullan, Univ. of Birmingham; Moyra I. Macnaughton-Jones, L.S.M.W.; Eileen M. Massey, King's Coll. Hosp.; Elizabeth T. Mess, L.S.M.W.; J. R. Murray, London Hosp.; A. M. Nussbrecher, Middlesex Hosp.; R. A. C. Rice, R. S. Risk, and A. H. T. Robb-Smith, St. Bart.'s Hosp.; C. P. Scott, St. Thomas's Hosp.; Violet R. Sharp and Dorothy A. Sharpe, L.S.M.W.; N. L. Shepperd, King's Coll. Hosp.; Everell M. Shippam, L.S.M.W.; C. K. Simpson, Guy's Hosp.; Effie Slater, Univ. of Leeds; Douglas Stanley-Jones, St. Bart.'s Hosp.; H. H. Steadman and F. H. Stevenson, Guy's Hosp.; T. S. Stone, London Hosp.; E. G. Thomas, Univ. Coll., Cardiff, and Univ. Coll. Hosp.; C. J. L. Thurgar, Univ. Coll. Hosp.; E. S. Vergette, St. Bart.'s Hosp.; J. C. S. Wells and A. S. Wigfield, Univ. Coll. Hosp.; E. R. Williams, St. Mary's Hosp.; Maureen D. Willmott Evans, L.S.M.W.; and T. H. Wilson, St. Thomas's Hosp.

L.S.M.W. = London School of Medicine for Women.

University of Manchester.

At recent examinations the following candidates were successful:—

FINAL EXAMINATION FOR M.B. AND CH.B.

A. N. Birkett, B. R. Bramwell, S. T. Cowan, C. G. Eastwood, J. R. P. Edkins, Dorothy A. Geiler, E. W. Hardman, Leslie Jones David Ockman, H. J. O'Loughlin, B. P. Robinson, and G. H. C. Walmsley.

Part I. (*Forensic Medicine, &c.*)—C. B. Ainscow, G. H. M. Franklin, J. K. Hadfield, J. F. E. Johnson, and E. D. Portman.

DIPLOMA IN DENTISTRY.

Edward Entwisle, J. B. Hoyles, Lawrence Moran, and Minnie H. Platford.

Royal Institution.

The Royal Institution has received an intimation from the Pilgrim Trust that under the terms of the gift of £2,000,000 to Great Britain by Mr. Edward S. Harkness, the trustees have allocated £16,000 to meet the deficiency on the fund for the reconstruction of the Institution.

The 105th course of Christmas lectures "adapted to a juvenile auditory" will be given by Prof. A. M. Tyndall at 3 P.M. on Dec. 30th and Jan. 1st, 3rd, 6th, 8th, and 10th. His subject will be the Electric Spark, and tickets (one guinea; juveniles, 10–16, half-price) are obtainable at the Institution, 21, Albemarle-street, London, W.1.

Appointments at the Ministry of Health.

The Minister of Health has appointed Sir Ernest Strohmenger to be Deputy Secretary to the Ministry of Health, in succession to Mr. E. R. Forber, and Mr. S. H. G. Hughes to be Principal Assistant Secretary for Finance and Accountant-General of the Ministry.

Lectures on Tropical Hygiene.

A series of eight lectures and demonstrations on tropical hygiene, which are intended for men and women outside the medical profession proceeding to the tropics, will be given at the London School of Hygiene and Tropical Medicine, by Lieut.-Colonel G. E. F. Stammers, from Jan. 14th to 23rd, at 2 P.M. A second series of lectures will be given from March 18th to 27th at 5 o'clock. Syllabuses and full particulars may be had from the Secretary of the School, Keppel-street, W.C. 1.

Voluntary Health and Pensions Insurance.

Dec. 31st is the latest date for taking up voluntary health insurance in the case of certain persons in "excepted employment." Those affected are railway clerks, municipal employees, and others, who have been paying contributions compulsorily for pensions (but not health insurance) since Jan. 2nd, 1930, or earlier, and who are given an opportunity by the Pensions Act of 1929 of becoming voluntary contributors for health insurance benefits as well as for pensions. Any person in this class who wishes to take advantage of the opportunity offered should therefore write at once to an approved society or to the Ministry of Health, Whitehall, London, S.W.

Research Fellowships in Tuberculosis.

The Medical Research Council announce that they have awarded three Dorothy Temple Cross Research Fellowships for 1930–31 to Arthur Ivan Granville McLaughlin, M.B., late Chief Assistant in the Tuberculosis Department of St. Thomas's Hospital; Reginald John Matthews, M.D., Chief Tuberculosis Officer of the Mid-Glamorgan area and Medical Superintendent of Cymla Hospital; and Lieut. Sidney Malcolm Burrows, R.A.M.C., attached to the Sudan Defence Force. Dr. McLaughlin has received a Fellowship for the study of methods of diagnosis and treatment at some chosen centre in the United States. Dr. Matthews and Lieutenant Burrows have received Senior Fellowships, and will make special studies of problems of tuberculosis among the native populations in Zanzibar and in the Bahr-el-Ghazal province of the Sudan, under arrangements made by the Council with the respective Governments. These are the first appointments to be made under the terms of the Dorothy Temple Cross benefaction.

Medico-Legal Society.

The annual dinner of this society was held on Dec. 12th at the Holborn Restaurant. The chair was taken by Earl Russell, past president, in the absence of the president, Lord Riddell, through illness. The toast of "Medicine and Law" was proposed by Sir William Willcox, who said that the two professions had much in common, both demanding great self-sacrifice and being very jealous mistresses. Medicine, however, was an ever-changing profession, depending on scientific knowledge, while law moved slowly and depended largely on precedent. Doctors and laymen were apt to be puzzled by the lawyer's behaviour as an advocate, and doctors were simple and honest people who could be turned inside out in the witness-box. Dr. R. A. Young, replying, welcomed the opportunity of addressing lawyers without the risk of that awful form of vivisection—cross-examination. Recently both law and medicine had been accused by the headmaster of Harrow of being accurate

professions; this was certainly a libel on medicine, for no biological study could be accurate. À propos of a lady who had said to him, "It is no fun being married to a doctor; you have neither a doctor nor a husband," he told the story of the famous physician who had warned his students of the dangers of antipyretic drugs by describing how his wife had once taken an overdose, and how he had returned home to find her collapsed, blue, clammy, and almost pulseless. Unfortunately, an inquisitive student had one day asked: "What steps did you take, sir?" "Steps?" the physician had replied, "I took no steps; she was not my patient." There were three things, Dr. Young concluded, on which medicine and law would never agree: the signs of intoxication, the criteria of insanity, and the demand of the doctors for professional privilege. Sir Thomas Hughes, replying for the law, protested that members of the Bar were the gentlest creatures in the world. Referring to Mr. Justice McCardie's recent remarks on perjury, he said that the learned judge was somewhat given to exaggeration, and his view must be accepted with caution. Making allowances for the great temptation to a prisoner giving evidence on his own behalf, perjury was not such a serious matter as Sir Henry McCardie had alleged. Mr. E. H. Tindal Atkinson, proposing the health of the society, described his experiences as a referee under the National Health Insurance Act, which had led him into some curious by-ways. He had learned that Richter's hernia had nothing to do with the great conductor, and that parkinsonian signs were not so agricultural as they sounded. He deplored the Latin and Greek phraseology which obscured medical reports; he had a feeling that the word "cæcal" had something to do with "hiding," and when he encountered it in a report he always wondered whether the writer really was concealing something. Witnesses were always ready with a theory of who was to blame, and he turned with relief to the medical reports, where he found fact and absolute impartiality. While doctors in this country continued to give evidence in this way there was little likelihood of a jury returning a verdict like that of the Irish tribunal which had said that the deceased had undoubtedly committed suicide, but added as a rider that they thought his end had been hastened by the post-mortem examination. Earl Russell, replying, said that the membership of the society had now passed 400. He did not think law and medicine had very much in common, but they both sought the truth. The desire of the doctor to tell the exact and simple truth was sometimes what made him so annoying to the lawyer who called him as a witness. Contesting Sir William Willcox's suggestion that law had ossified in its shell, he cited the many recent revolutionary Acts of Parliament passed by lawyers, particularly the Property Acts of 1925. Sir Albion Richardson proposed "The Guests," and Sir Alfred Tobin and Lieut.-Colonel C. T. Samman replied.

The Old Epsomian Club.

The annual dinner of the Old Epsomian Club was held at the Hotel Great Central, London, on Thursday, Dec. 11th, when Dr. L. L. C. Reynolds presided over a large company of members and guests. After the loyal toasts, the health of the president was proposed by Mr. A. C. C. Parkinson, who commented upon Dr. Reynolds's fine record at Epsom, when, he said, the early interest which he took in the school rifle corps foreshadowed the admirable record which he secured in the Great War; for he was mentioned in despatches five times, decorated by the French and Italian Governments, and obtained also the D.S.O. with bar. Dr. Reynolds in his reply took up none of the allusions to his military career, but briefly stated how he viewed the development of the school since his boyhood, with its material extensions and the accumulation of a valuable tradition. He was here speaking to the second toast "Floreat Epsomia," of which he was the proposer, when the headmaster, Mr. A. C. Powell, responded by telling, with details, the creditable performances of the school during the past year in classroom and playing field. He made particular allusion to the construction of the new sanatorium, now in the building, and designed to be a model of what a public school sanatorium should be. The toast of the Guests was proposed by Mr. George Neligan, who coupled with it the names of Viscount Burnham (the President of the College) and Lord Dawson of Penn. Lord Burnham declared his gratification in succeeding to the office of President such men as Lord Granville and Lord Rosebery, the latter of whom was a dear friend of his own. Lord Dawson, who began in light vein with several amusing stories, went on to address members of the medical profession present, warning them to be ready for social developments which were bound to ensue, and which would lead to situations when doctors would find it not only necessary but their duty to get into far closer relations with the public. The dinner was felt by all present to have been an enjoyable one.

Appointments

BAILEY, H., F.R.C.S. Eng., has been appointed Surgeon, Royal Northern Hospital, London.

LAMONT, D. C., M.B., Ch.B. Edin., D.P.H., Medical Officer of Health for Burnley.

MULCAHY, AILEEN M., L.R.C.P.I., L.R.C.S.I., D.P.H., Temporary Asst. Medical Officer of Health, Galway.

Certifying Surgeons under the Factory and Workshop Acts: HAY, W. K., M.B., B.Ch. Belf. (Market Drayton); RITCHIE, H. N. (Hoyland Nether, West Riding).

Vacancies

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary.—Asst. Surg. to Dental Department.
Accrington Victoria Hospital.—H.S. £150.
Birmingham General Hospital.—Two Res. Surg. Registrars. Each £100. Res. Anæsthetist. £120. Also H.P., and Two H.S.'s. Each £70.
Bradford Royal Infirmary.—Hon. Surg. Also Hon. Asst. Surg.
Brighton, Royal Sussex County Hospital.—Cas. H.S. £120.
Bristol General Hospital.—H.P.'s, H.S.'s, Res. Obstet. O. Each at rate of £80. Also Cas. H.S. At rate of £100.
Bristol, Hortham Colony for Mental Defectives.—Med. Supt. £700.
Burnley, Victoria Hospital.—Two H.S.'s. Each at rate of £150.
Bury St. Edmunds, West Suffolk General Hospital.—Jun. Res. M.O. £150.
Cardiff Royal Infirmary.—Two Hon. Asst. Surgeons.
Central London Ophthalmic Hospital, Judd-street, St. Pancras, W.C.—Sen. and Jun. H.S. £120 and £100 respectively.
Chesterfield and North Derbyshire Royal Hospital.—H.S.'s. All at rate of £100–£175.
Derby County Mental Hospital, Mickleover.—Jun. Asst. M.O. £350.
Durham County Hospital.—Two H.S.'s. Each £150.
Hertford County Hospital.—Hon. Asst. Surg. Also H.P. At rate of £150.
Hospital of St. John and St. Elizabeth, 60, Grove End-road, St. John's Wood, N.W.—Gynæc. Surg. Also Radiologist.
Hospital for Epilepsy and Paralysis, Maida Vale, W.—Hon. Asst. S.
Hospital for Sick Children, Great Ormond-street, W.C.—Part-time Jun. Cas. O. At rate of £150.
Hull Royal Infirmary, Sutton Branch.—H.P. At rate of £160.
Hull Royal Infirmary.—2nd H.S., 3rd H.S. And H.S. to Ophth., &c. Depts. Each at rate of £150. Also Cas. H.S. At rate of £130.
Indian Medical Service.—Commissions.
Inverness, Royal Northern Infirmary.—H.P. At rate of £100.
Leamington Spa, Warneford General Hospital.—Res. H.P. and H.S. Each £165.
Leeds City Sanatorium, Killingbeck.—Med. Supt. £850.
Leicester Royal Infirmary.—Hon. Physician. Hon. Asst. Physician. Also Res. H.P. At rate of £125.
Liverpool Royal Infirmary.—Hon. Surgeon to Lock Dept.
Liverpool Sanatorium, Delamere Forest, Frodsham.—Asst. Med. Supt. £250.
Manchester Royal Infirmary.—Asst. Surg. Officer to Gynæcological Dept. £35.
Manchester Royal Infirmary, Central Branch, Roby-street.—H.S. £100.
Margaret-street Hospital for Consumption, 26, Margaret-street, W.—Hon. Asst. Physician.
National Hospital, Queen-square.—Hon. Surg. Asst. Also Hon. Asst. Surg.
Nottingham General Hospital.—H.S. At rate of £150.
Poplar Hospital for Accidents, East India Dock-road, E.—Sen. Res. O., &c. £200 plus £75.
Preston, Sharoe Green Hospital, Fulwood.—Jun. Res. M.O. At rate of £104.
Prince of Wales's General Hospital, N.—Asst. Pathologist. £200.
Rochester, St. Bartholomew's Hospital.—H.P. At rate of £175.
St. Mark's Hospital for Cancer, Fistula, and other Diseases of the Rectum, City-road, E.C.—H.S. At rate of £75.
St. Mary's Hospital, W.—2nd Asst. Pathologist. £250.
Salford Royal Hospital.—Cas. H.S. At rate of £125.
Sheffield, Jessop Hospital for Women.—Three Asst. H.S.'s. Each at rate of £100.
Sheffield Royal Infirmary.—H.P., H.S., Asst. Aural and Ophth. H.S. Also Asst. Cas. O. All at rate of £80.
Sheffield, Winter Street Hospital.—Asst. Tuber. O. £350.
*Southampton, Royal South Hants and Southampton Hospital.**—Sen. H.S. £225. Also H.P., and Two Asst. H.S.'s. Each at rate of £180.
Southgate Urban District Council.—M.O.H., &c. £800.
Swansea County Borough.—Asst. M.O. £600.
Swansea General and Eye Hospital.—H.P. £150.
Swansea Hospital.—Sen. Res. O. £300.
Walsall General Hospital.—H.S. At rate of £150.
Warwick, King Edward VII. Memorial Sanatorium, Hertford Hill.—Sen. Asst. M.O. £275.
Weston-super-Mare General Hospital.—Res. H.S. At rate of £150.
Wrexham and East Denbighshire War Memorial Hospital.—Two Res. H.S.'s. Each at rate of £150.

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Cranbrook (Kent).

* The salary for the post of House Physician to the Royal South Hants and Southampton Hospital, which is £180 per annum, was given in error in our advertisement columns last week as £120. The correct salary was, however, noted in this column.

NOTES, COMMENTS, AND ABSTRACTS

THE FUTURE OF THE MEDICAL CURRICULUM.*

BY LINDSEY W. BATTEN, M.B. CAMB., M.R.C.P. LOND.,
ASSISTANT PHYSICIAN TO THE EAST LONDON HOSPITAL, SHADWELL.

WHAT, precisely, is intended to be the end-product of the medical curriculum?

There are two possible answers. It may purpose to train men for the practice of medicine, its end-product being men and women ready to practise. Or it may profess no more than to teach the principles of our art, to teach medicine and surgery in the abstract as provinces of knowledge; so that if some young practitioner, finding deficiencies in his armament, rounded on the curriculum, like Omar's pots on the Potter, and endeavoured to call that august being to account, the Curriculum might reply: "I never promised to make a practitioner of you, you have learned the science and theory of medicine, apprentice yourself to a practitioner of experience and he will teach you the art." If this position is in fact tenable, much of what I have to say falls to the ground; but in these days of a training period six years long or more, and of a curriculum which includes, besides other practical clinical work, the giving of anæsthetics and the actual conduct of labour, it cannot, I think, be seriously contended that the purpose of our education is other than to prepare us for practice.

I think too—though this is perhaps debatable—that the ordinary standard product of the works must be intended to be general and not special practitioners. Later on, no doubt, modifications may be made in the body and fittings even to the extent of removing it from the chassis and substituting a brand new body of some highly specialised kind. It is right, too, that the workshops should be able on occasion to build what the jargon of the day would call "super-models" for international contests. But to drop the metaphor, no one will seriously contend that it is the chief or the most important business of medical schools to turn out specialists and eminent consultants; their chief business is to turn out good doctors. If this argument is sound we may reasonably and pertinently ask how far the training we received has, in fact, fitted us for practice. Did we enter practice so well equipped that only those things which it belongs to experience to teach were lacking? Did we find that our equipment, though good in patches, was inexplicably incomplete in some respects and in others complicated and cumbersome, including a six-inch howitzer in place of a rifle and a mechanical concrete mixer instead of a spade? Or have we had so much to learn and to unlearn that we would like to grasp this sorry scheme of things entire, to shatter it to bits, and then remould it nearer to our heart's desire?

Few of us, I imagine, would run to this last extreme. If we believe ourselves competent we must in fairness give credit both to our teachers and our teaching. There are no "self-taught" in our profession, and each of us, I suppose, daily recalls with gratitude some at least of those who laboured to instruct him and would gladly remember more of what they taught.

Furthermore it was all extremely enjoyable. I suppose it is common for young men to enter any skilled trade or profession more because the learning of it looks attractive and holds a promise of initiation into mysteries than because he clearly sees himself earning his living in its practice. Ask any elementary schoolboy what he would like to be and, if he answers at all, he will invariably reply "an electrical engineer." He means that he would like to be a powerful magician. The same ambition, coupled very often with a laudable desire to follow in father's footsteps, urges, lures, or gently wafts the erstwhile schoolboy on to the road that leads to medical practice. He enters on his studies with zest and enjoys them. Whether he ever looks further ahead than the date of the next examination may be doubted, and it must be confessed, I think, that he is very seldom invited to do so. I cannot help thinking that, at least in the last two or three years of the course, he might, with advantage, be urged to take a longer view. Be that as it may, there is no doubt that for the present he enjoys being a medical student and uncritically accepts the curriculum as he finds it.

The Student's Progress.

Elementary chemistry and physics are not very exciting, but can be learnt after a fashion with no great effort and still more easily forgotten.

The course in biology, on the other hand, stimulates thought and imagination, and one would like to know what master hand devised it. However much its details may be forgotten it leaves in the mind an enduring sense of the unity of Nature, of the reality of evolution and of man's kinship with other living things. Somewhere between the dog-fish and the rabbit the young man feels that now indeed he is initiated into the mysteries and is an entered apprentice to medicine.

Anatomy attracts the mind as a difficult but still possible memorising feat, presenting also opportunities for craftsmanship to the dexterous; but even its surgical applications are hardly for a moment considered, its medical applications never; nor, in my experience, is it ever suggested to the anatomy student that an occasional visit to the post-mortem room would help to correct and vivify the desiccated and somewhat distorted simulacrum of the human body presented to him in the dissecting room, and would help to preserve his sense of proportion, at a time when it needs all the help it can get.

Physiology, like biology, is, or should be, an inspiring subject. Here is a living science, moving, advancing with strides. The frontiers of knowledge with explorers at work on them are reached in a day's journey from the base; it becomes apparent that research—at least for one with inexhaustible patience and an assured private income—must be an enthralling occupation, and to play at being a physiologist while time serves is pleasant enough. How ingenious are the theories of colour-vision! With what cunning have the experimenters endeavoured to solve the riddle of the renal tubules! How intricate is the minute anatomy of the central nervous system, and what an intellectual feat to visualise it and commit it to memory (though it seems odd that this province of anatomy should be called physiology)! Clearly we shall be very clever doctors when we know all this, cleverer much than the generation who preceded us, whom we begin now to suspect of being seriously handicapped by their ignorance of the latest laboratory work on the rabbit and the dog. True, most of what we learn applies immediately to the smaller quadrupeds, and we hear little, or at any rate much less, about the workings of intact human beings, but perhaps they are only large-scale guinea-pigs, or perhaps we shall come to that; anyway there is quite enough to learn as it is, what with thrombin and thrombokinase, creatine and creatinine, bilirubin and urobilin, tyramine and tryptophane, the visual purple, and the deep connexions of the red nucleus.

Filled to the brim or over, stuffed (I am impelled to say) with facts anatomical and physiological, the young man enters the surgery and the wards. Very

* Based on an address from the chair at a meeting of the Hampstead Division of the British Medical Association on Oct. 9th.

refreshing and stimulating it is to stitch up cut heads without inquiring what makes the blood to clot, very inspiring to find oneself actually in some degree responsible for the treatment of real flesh-and-blood patients. It is a glorious moment, but shadows of the prison house begin to close. Bacteriology, histology, biochemistry, pharmacology, even helminthology rise up like the thorn-trees before the sleeping beauty's prince, until medicine is obscured by its subsidiary sciences and the patient concealed behind the supposed reality of his disease. Apart, too, from the time spent on subsidiary sciences, that spent actually in clinical study is rather curiously apportioned; but of this more hereafter.

Attainments of the Graduate.

Behold at last our young man qualified. He has satisfied the examiners in the preliminary sciences, he has diligently attended the practice of the various departments of a hospital, he has conducted sundry labours, he has satisfied more examiners, and he is, say, six years older than he was when he began his studies. Let us give him one more year to hold a house appointment (for his father's purse is almost empty), and let us then take stock of the situation. How far is he now fitted to become a good general practitioner?

He has made a fairly serious study of two sciences—anatomy and physiology—and has dabbled in at least eight others (it would be easy to increase the number by meticulous subdivision). An almost incredible number of facts more or less related to medicine and surgery have been loaded on to his long-suffering memory and carried by it for a longer or shorter distance. He has known in what form manganese occurs in nature and how sulphuric acid is manufactured; likely enough he has had by heart the atomic weights of the elements. He has known the branches of the internal maxillary artery ("try my superior ink made to prevent blots, &c."), the components of the otic ganglion, and the relation of the structures passing through the sphenoidal fissure ("four fat ladies sitting nipping inferior sherry wine"). He has known the spectrum of methæmoglobin, which organisms liquefy gelatin, and whether *Bacillus paratyphosus* B. forms acid and gas in mannite. He has known the details of Chopart's amputation, and has been able to identify a Murphy's button in the examination in surgical morbid anatomy. He has spent an enormous amount of time getting these and hundreds of other facts by heart against the day when the examiner should cry "stand and deliver." Fortunately, as some may think, he does indeed empty the saddle-bags, which else would be quite intolerably cumbersome and heavy. He turns the stuff out of them as readily as once he lightened himself of the Latin genders and the Greek irregular verbs, and travels on with hardly more of permanent luggage than at the outset of the course. But the time spent in loading up and the labour spent in carrying this unnecessary burden of unsorted facts no one can give him again.

Fortunately he has learnt much beside facts. He has learnt the methods of experimental science, the nature of scientific evidence, and the necessity for controls. He has learnt (we will hope) how transitory are theories, how insecure the foundations of knowledge, how vastly greater the unknown than the known. He has learnt to handle a test-tube, a scalpel and a microscope; he knows something of the complexity of animal structure, the intricacy and mystery of its workings, the ways in which it may be expected to react to stimuli. He has been in fairly close contact with a large number of patients, he has learnt to take a history and to make a physical examination of the more easily accessible regions of the body. He has seen many obscure systemic diseases investigated and diagnosed, and a few common ones; he has attended at a great many abdominal operations, and performed a very few minor regional ones; he has skimmed through certain of the special departments, but has thought them to be, as their name seems to imply, rather the province of specialists. He has perhaps caught a glimpse in passing of the massage department, and has wondered what exercises are performed with the help of that rather exciting-looking gymnastic apparatus; he believes there is something called electrical treatment which you order in cases of paralysis, and he knows there is something called good nursing which is of importance in pneumonia and typhoid.

His year as a house man has probably taught him more, from the practitioner's point of view, than the preceding two years put together; and let us grant at once that if he has time and money enough to be in turn house physician, house surgeon and the house officer of a special department he will be a well-educated doctor; but this can happen only to the few and he is fortunate if he can hold one appointment at his own hospital. Even this is not quite pure gain, for at least in some, and I suspect in many hospitals, there is a tradition that the house man shall regard himself as already a specialist. Is he a house physician? Acute abdominal pain is scarcely his province. A house surgeon? The chest is not his department and he disdains the stethoscope. Is he either of these? The state of the tympanic membrane is hardly a thing you would expect him to investigate. These fictions may even form the basis of a kind of game, a sort of many-cornered tennis in which the patient is the ball. Many of us must have played it, in the days of youth, many of us must have heard from patients that it is still in vogue; but it is a bad game, for apart from the tribulations of the unfortunate ball, it is very bad for the players, whether they play in after years an all-round or a special game, and it is not too easy to get rid of the narrowly specialised outlook which is apt to be formed at this time.

At long last the young man bids a final farewell to examiners, teachers, medical school, and resident quarters, and enters on the independent practice of his profession.

The Limits of the Normal.

There are, of course, many varieties of medical practice and their requirements differ. I will try to confine myself to criticisms which are at least widely applicable, though they may apply rather more to general than to specialised kinds of practice. The notorious complaints that the student is not well trained in practical midwifery and knows little of what is called infant welfare need not be pressed home in detail, for they are but part of a much wider accusation which may be made. The young practitioner, if he is at all self-critical and observant, will find, and will keep on finding, that he knows lamentably little of normal men, women, and children and their bodily functions, and this in spite of the years he has spent in studying anatomy and physiology, intended presumably to teach him this very thing. This truth I began to perceive within a few months of qualifying, when I noticed (as did others) that a large number of army recruits had pulse-rates much in excess of what I had been taught was "normal" but suffered no inconvenience from their tachycardia; and it was last rubbed into me a month ago when I learnt from a patient, with a chart to back the statement, that the body temperature in women rises half a degree or more above normal in the week preceding menstruation. (This, she told me, is common knowledge in sanatoriums.) In the intervening years my conception of the limits of the normal has been constantly widening and my respect for the power and influence of personal hygiene constantly increasing.

The trouble is that the anatomy we learn is a cadaverous anatomy and the physiology a laboratory physiology, but little of it strictly human and none of it clinical. The student goes not only into the wards but into practice quite unfamiliar with the clinical aspect of normal human beings. He does not know how they grow up or how they grow old, on what diets they can live and thrive, what are their

requirements in the way of sleep, exercise, and clothing, and what effects on their bodily functions may be produced by different mental and physical environments, occupations, and habits. This is partly because experimental clinical physiology is as yet in its infancy and much of what might be discovered is still unknown, but it is partly because what knowledge there is is not collected and taught. If he has at all considered anatomical and physiological types, it is only in terms of that precocious and airy science called endocrinology; it has never been hinted to him that he will have, as a matter of daily practice, to try to separate what is inherited and constitutional in a given clinical picture from what has been acquired. It may be said this is an obscure and difficult subject, but so are biochemistry, bacteriology, and the aforesaid endocrinology, to all of which he is invited to apply his poor wits.

All of us must have seen many times cases in which some anatomical peculiarity, some postural fault, or some disorder of function due to a lack of harmony in or around the patient has been diagnosed as an organic disease to the detriment of the patient and the discredit of the profession, and I cannot help thinking this will continue until a course in clinical physiology is introduced into the curriculum in which the student will see and examine as many different kinds of normal human being as can be collected for demonstration.

The Mind and its Disorders.

Closely related to this is the neglect of psychology. There are a few signs that this is beginning to be rectified, but I think it would be hard to deny that the present tendency of medical education is to send the young doctor into practice a more or less conscious materialist.

Almost the only teaching the young man receives about the mind concerns its extreme and gross disorders. So much is this so that the word "mental" has in common speech become almost inverted in its meaning, and when a nurse announces to us with bated breath that "she really thinks the patient is slightly mental," we understand her to mean not that he has glimmerings of reason or that his mind is having a slight influence on the course of the illness, but that he has lost his reason. Further, it is only with the utmost caution that we can speak to a patient about his mind (calling it by its name) unless we want him to think we suspect him of insanity. This, I believe, is because for some time past it has been vaguely but generally understood that medicine was not on speaking terms with the mind—cut it dead when they met and had been heard to say that it did not exist. This trouble must go back some way. "Canst thou not minister to a mind diseased?" asks the distracted Macbeth of his wife's medical attendant, obviously expecting the answer *no*. Sure enough he gets it. "Therein," says the doctor, rather shocked at being asked, "the patient must minister to himself." "Throw physic to the dogs," says Macbeth, "I'll none of it." A very intelligent sentiment, for a physic which cries off as soon as mind is mentioned is worth but little to the human patient, though it may be useful enough to the canine.

As a philosophic theory we may, if we like, argue, or even believe, that mind is not, that thought is only the tune our brains play when stimuli strike their keys and that its quality is determined by the ductless glands. But whatever its ultimate value—and I think it much too facile and shallow-seeming to be true—such a theory is in practice a bruised reed on which if a man lean it will go into his hand and pierce it. The word *mens* was not invented for nothing, and there is no fact which more obstinately confronts us in practice than the fact that our patients have minds, that with their minds we have to deal, and that we overlook or disregard them at our peril and theirs. Many come to us frankly because they are anxious or afraid; another large group complain to us of symptoms demonstrably due to anxiety, unhappiness, or social maladjustment; the ailments of others, trivial in themselves, acquire a large importance from the charge of fear which they carry; and of the rest, perhaps a minority, who have frank organic disease, it may be said that the course of their malady will always be influenced and sometimes determined by their mental attitude to it. Only when a patient is deeply anæsthetised may we for a moment forget his mind, perhaps not even then.

This plucking from the memory of rooted sorrows, disdained by Lady Macbeth's physician, is a task we are asked to attempt far more often than to pluck a malignant growth from the rectum or even a sebaceous cyst from the scalp. It is not an easy task, but it can be attempted and with much better hope of success if we have learnt something of the natural history and behaviour of rooted sorrows and what means are available for their evulsion. The doctor of Dunsinane lost his distinguished patient a few days later, her husband remarking, again rather shrewdly, "she should have died hereafter."

It is quite true that the subject is not an easy one to teach and that the wards of a hospital are not the best place to teach it in; but it is a subject which lends itself better than most to the method of teaching by lecture, and the medical casualty department of every hospital teems with examples of the common neuroses some of which the student might, with great advantage, be set to diagnose. Even if he got no further than to demonstrate to his own satisfaction that some kind of anxiety or fear was the cause of the symptoms he would have learnt much, and from time to time a specific cause for the trouble might be discovered even in the out-patient department and perhaps be dealt with or removed. At present I think it must be admitted that the much-abused word "functional" is suffered to pose as a diagnosis, and, what is worse, to carry with it the implication that none but palliative or placative treatment is indicated. The time, I hope, will come when the word "functional" will no longer be employed as a polite synonym for "psychogenic," and when it will be recognised that though organic changes in the tissues must often be irremediable a disorder of function should be rectifiable.

Function and Structure of the Curriculum.

One more defect in the curriculum must, I think, have come home to many of us. The student who is preparing himself for general practice may not unreasonably suppose that it is in the so-called general wards and in the departments devoted to undifferentiated medicine and surgery that he will find the kind of case he will most commonly meet in practice, and that the special departments are chiefly of interest to those who propose to specialise. The curriculum and the examinations both tacitly support this view. When he comes to practise he finds that whereas general systemic diseases and abdominal catastrophes are uncommon, diseases and disorders of the ear, nose, throat, skin, eye, and limbs, to say nothing of diseases of children and disorders of women, occur every day. Could we have our time again I fancy many of us would allot it very differently.

But it is easy to multiply criticisms. Is it possible to sketch out a revised curriculum? Could the practitioner conspire with Fate or with the Conjoint Board or any other of the gods who control our educational destinies, how would he set about the remoulding? This depends, of course, on what view he takes of his own functions.

"There are men," said R. L. Stevenson, "and classes of men that stand above the common herd: the soldier, the sailor, and the shepherd not unfrequently; the artist rarely; rarelier still, the clergyman; the physician almost as a rule. He is the flower (such as it is) of our civilisation; and when that stage of man is done with, and only remembered to be marvelled at in history, he will be thought to have shared as little as any in the defects of the period, and most notably exhibited the virtues of the race. Generosity he has, such as is possible to those who practise an art, never to those who drive a trade; discretion, tested by a hundred secrets; tact, tried in a thousand embarrassments; and what are

more important, Heraclean cheerfulness and courage. So it is that he brings air and cheer into the sick-room, and often enough, though not so often as he wishes, brings healing."

It seems that the Emperor Napoleon had, as personal physician, one Corvisart, for whom he had a high regard. "Medicine," says Corvisart, "is not the art of curing diseases; it is the art of treating them, with the hope of curing them, and of soothing and satisfying sick people." "The doctor," he says again, "ought to be on his guard against the itch to explain everything. He ought to know that Nature, hidden in most of her works, is especially so in diseases." Both these writers emphasise the fact that medicine is an art; Stevenson contrasting it with a trade, Corvisart with an exact science. Corvisart's reflections are the more apposite to my present purpose, but Stevenson's high praise is worth noting, if only because it shows for what we are most valued by some at least of our patients. We should be surprised to find such things said about us in these days of scientific medicine. The point I wish to make is that medical practice, whatever may be said of medicine, is an art, an art and a craft, not a science; and though many may run to and fro and knowledge be increased, an art it will and must remain. We are of value to our patients most for what we are (and were no curriculum can help us), next for what we can do, somewhat less for what we know, and least for what we can, or think we can, explain. Research, as has been lately pointed out, whether in the laboratory or at the bedside, is only to a limited degree compatible with any kind of practice. Either of them is able to absorb the time and energies of any ordinary man, the aims and methods of the two, and the intellectual qualities and mental outlook they require are diverse and often conflicting.

New facts and new remedies will continue to be discovered in the laboratories and new theories formed there; they will be handed out to the practitioner who will receive them, let us hope gratefully enough but with a certain scepticism, doubting," like Corvisart, "the value of a drug (or other remedy) to which many virtues are attributed, especially if these virtues are of an opposite character"; will weigh them in the scales of reason and experience, try out those which have the air of truth, dispense that which proves good and reject that which proves worthless. The last word as to worth and truth will generally lie with him. The day is not distant when the wise patient will apply direct to the scientist for diagnosis or treatment.

What Should be Taught.

The curriculum of my hopes, the good practitioner's curriculum, will lay more stress on experience and less on learning; it will impute far more value than at present to technique and skill of hand; it will be far more discriminating in its choice of facts to be learnt, and will be chary of teaching any theories at all.

The young man in this golden age to be will attend few lectures, for they will be strictly confined to matter not to be found in books; he will learn an anatomy imbued with a sense of proportion, paying regard to what is clinically important and what is not; an anatomy, too, constantly mindful of the relation of structure to function. It will be made quite clear that certain anatomical facts which experience has shown to have little or no clinical value are not to be memorised and will not be asked in examinations, though the list of these facts will be long. Thereby the justly famous mnemonics will perish from the earth, but we cannot have everything. Lest this lead to slovenliness stress will be laid on good and careful dissection and far more marks will be given for the practical than for the written examination. Radiographic anatomy will be studied at the same time as anatomy "in the round"; the student will learn the anatomy of fractures and dislocations while he is dissecting the limbs and will visit the post-mortem room while he is exploring the thorax, abdomen, and brain.

The judicious pruning of physiology will be a more difficult matter but here, too, it should prove possible to eliminate the memorising of many unimportant facts, and of names, bygone experiments, and exploded theories, and to make room for that course in clinical physiology of which I have spoken. The tiny seed of this course is to be found already in the curriculum where the student of physiology is required to learn the use of the ophthalmoscope, the perimeter, and the sphygmomanometer, but the seed is an unconscionable time in germinating. When it does at last put forth its leaves and fruit he will learn to make a complete clinical examination of healthy subjects and to record the results, employing not only the ophthalmoscope but all such "scopes" as may be reasonably employed in health as well as his unaided senses. The work done will resemble in part the work of child welfare centres, in part the examination of candidates for life insurance or recruits for the Air Force, and it will be combined with research into the limits of the normal. This course should serve to bridge effectively the gap, at present so awkward to negotiate, between the class-room and the wards. There will be no shock in the change, no temptation to forget what has been learnt, little to learn in the examination of sick patients, and much less danger of mistaking the unusual for the pathological.

In his clinical years our student will spend more time with patients, less time in the museum, the library, and the laboratories, and very little time in the operating theatre. He will be taught that while he cannot be expected to know all about his patient's disease he must know all about his patient. At every stage of his career he will be prohibited from specialising; in vain will he disclaim all knowledge of heart or lung in a surgical, of ears and nose in a medical, ward; he may not know what is wrong with them but he must examine them and report what he sees and hears. The special departments will be commended very strongly to his notice. He will attend a fracture clinic and work in it with his own hands; he will learn to pass the Eustachian catheter, to perform a myringotomy and to wash out an antrum; he will learn to put a limb in plaster and something of orthopœdic shoemaking, and will himself practise remedial exercises; he will apply a starch poultice to an impetiginous head and Unna's paste to varicose ulcers; he will perfect himself in the art of bimanual palpation of the uterus; he will write a diet sheet for a child with rickets and another for one who has bilious attacks; he will be attached as clerk to the casualty physician and write his prescriptions for him in full; he will inject varicose veins and piles and give transfusions of blood.

All these accomplishments and many others like them could be taught at least as easily and as safely as the giving of anæsthetics or the conduct of labour. All are of more value in practice than much of the book-learning which now so largely supplants them; is not even the meanest of them of more use, as between doctor aud patient, than any knowledge of the properties of suspensoid and emulsoid colloids which the student is likely to acquire or to retain? All are at least embarrassing and at most impossible to acquire in the world outside, yet I think it must be agreed that the student who has learnt these things in hospital has had rare good fortune.

At his final examination our student will not be dumbfounded if he is asked to describe the common types of dyspepsia, their ætiology and treatment; a question on tonsillitis, on influenza, or acute otitis media in a child will not surprise him, nor will he think it unfair to meet as a "short case" a patient suffering from sciatica whose dental radiograms he will be expected to demand and whose antra he will be wise to trans-illuminate.

In a still more golden age the student will be marked like a schoolboy on his term's work and examinations will become relatively unimportant; their written parts, I think, will largely disappear, and the practical and viva voce examinations will be

planned to test thoroughness in examination, clinical experience, and acumen, manual dexterity and perhaps even skill in handling garrulous, reticent, or otherwise difficult patients. But without any such revolutionary change I suggest that a student taught and trained in the way I have tried to outline would be likely to prove, in plain English, a better doctor than one trained in the present régime. He would be less tempted to cry out in every crisis for help from a laboratory test, from a complicated diagnostic machine, or from a specialist; he would be better able to stand up as a man should against that brown and sticky torrent of false science which pours unceasing through our letter-boxes; less burdened with the findings and the theories of the sciences he would have at heart more of the spirit of a scientist; best of all, he would be of far more value to his patients in their troubles and would rise both in their esteem and in his own.

WHITAKER 1931.

THE 63rd annual volume of the Almanack first issued by Joseph Whitaker, F.S.A., in 1868, contains the astronomical and cosmic data with which the year-book was started, the value of which the average reader may be apt to overlook, for grafted on to it is a vast amount of information respecting the government, finances, population, commerce, and general statistics of the various nations of the world. We have taken this description from the familiar title page with the zodiacal signs and seasons, as it cannot be bettered. The editor-in-chief of the Almanack tells us he has used many suggestions made by correspondents and expresses gratitude for favours to come (perhaps he would insert our present address correctly); but it would require a very bright boy or girl to find an omission in the 1931 Whitaker, although it would do him (or her) good to try, and incidentally he (or she) might get mentioned in 1931, for was it not Miss Venetia Burney, aged 11, who proposed for the newly discovered planet the name Pluto, which has been accepted by the trustees of the Lowell Observatory. No one would go to the Almanack for medical information, but there is a useful classified summary of metropolitan hospitals (pp. 400–406), and in the advertisement columns there are many entries under hospitals and institutions, to which the proprietors have added the kind note "The hospitals and institutions given in this section deserve the heartiest and most generous support it is possible to give." The Almanack is published in two editions, one bound in red and green cloth, containing 960 pages, at 6s., the other bound in orange paper cover, at 3s., which omits information about colonial and foreign countries as well as the annual summaries which form so interesting a feature of the larger work.

NEW PREPARATIONS.

QUINISAN (Messrs. Howards and Sons, Ltd., Ilford) is a new quinine salt—the bi-salicylosalicylate—which is identical with the U.S.A. quinisal. It is a definite combination of quinine and salicylic acid forming a crystalline powder which is insoluble in water, but which separates into its constituents in the stomach and intestines. The firm has received considerable medical evidence that the preparation has been valuable in the treatment of catarrhs, influenzal or otherwise, and early tonsillitis.

(1) NORMACOL, (2) RAMINAL (Messrs. H. R. Napp, Ltd., 3 and 4, Clement's-inn, Kingsway, London). (1) This preparation is an intestinal evacuant of vegetable composition, and mild in action. The manufacturers adduce, as a test of its bulk-forming and emollient character, the fact that one teaspoonful of granules will absorb five ounces of water in about four hours, with the result that a gelatinous mass is yielded. The sample received by us does not claim to be a novelty, but the manufacturers point out that considerable improvement has been effected in its flavour, and this is a distinct point to its advantage. The dose, as given on the supply tins, is from one to two teaspoonfuls for the adult and half that quantity for the child, but the wise instruction is included that, while the quantity may be increased if required, the dosage should be regulated by the doctor.

(2) Raminal will be sent free of charge to medical practitioners who may desire to make a trial of it. It is a blend of theobromine calcium salicylate with chlorophyll and phosphate of iron, and its components indicate the particular action it may be expected to have in anæmia and hypertonic conditions. It is supplied, to the medical profession only, in boxes of 50 tablets.

THE PRINCIPLES OF DIET.

A NEW and revised edition of Lindsay and Mottram's "Manual of Modern Cookery" (London: University of London Press. 1930. Pp. 316. 4s. 6d.) contains an introduction to the principles of diet which should enable anyone who uses the manual to do so intelligently. Left to himself, it is stated, the average person of means takes a diet which, as regards its chemical composition and energy value, is constant throughout temperate regions; nevertheless, although instinct may be a wise guide, grave dietetic faults are often committed by the sanest of people. The commonest example of this is seen in the results of upsetting the balance between fats and carbohydrates. If we take too much fat or too little carbohydrate our health is promptly upset; malaise, nausea, and actual sickness may result; or we suffer from trouble which may be vaguely diagnosed as biliousness or sick-headache. Intelligent users of this manual will not err thus. There are, it is added, more than hints of a necessary balance between protein and vitamin B, between protein and calcium, and between cereal foods and vitamin D. The question arises, is this recognised by those who prepare our meals? and the remainder of the chapter is an answer to this inquiry. The chapter on the principles of cookery is of equal value, and each of the remaining 250 pages of the book contains three to six clear concise descriptions how to prepare almost any kind of food. A table of contents at the beginning makes reference singularly easy.

Births, Marriages, and Deaths

BIRTHS.

ANDERTON.—On Dec. 9th, at Moresby House, Hindley, Lancs., the wife of Dr. Reginald Anderton, of a daughter.

DOUTHWAITE.—On Dec. 10th, at Harley-street, W., the wife of Dr. A. H. Douthwaite, of a daughter (stillborn).

HOUGHTON.—On Dec. 10th, the wife of L. Wynn Houghton, F.R.C.S., Elvyne, Berkhamsted, of a son.

SALISBURY.—On Dec. 7th, at Woodlands, Billing-road, Northampton, the wife of Walter Salisbury, M.D., M.S., F.R.C.S., of a daughter.

MARRIAGES.

MAYBURY—LYALL.—On Dec. 11th, at St. Giles's Cathedral, Edinburgh, Bernard Constable Maybury, F.R.C.S., to Isobel Wilson, elder daughter of Mr. and Mrs. George Lyall of Torbruad, Turriff, Aberdeenshire.

DEATHS.

DESPARD.—On Dec. 8th, at Yarmouth, Isle of Wight, Rosina Clara Despard, M.D.

FAIRBANK.—On Dec. 9th, at George-street, Hanover-square, W., John Fairbank, M.R.C.S., aged 85.

GARDINER.—On Dec. 9th, at Dunmow, Joseph Napier Gardiner, M.D., F.R.C.S., L.R.C.P., aged 59.

MACK.—On Dec. 11th, at Windmill-avenue, Ewell, Surrey, Hans Hamilton Mack, B.A., L.R.C.P., of Sydney, N.S.W., aged 69 years.

NIALL.—On Dec. 12th at "Kinkora," New-road, Chatham, William George Niall, M.D., M.Ch.R.U.I., aged 68 years.

PINTO-LEITE.—On Dec. 12th, at Fellows-road, N.W., Dr. Hubert Pinto-Leite, aged 51.

STIDSTON.—On 15th inst., Charles Algernon Stidston, D.S.O., M.D., beloved husband of Olive Stidston, of 14, Waterloo road, Wolverhampton, aged 49.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

GIFT OF A HOSPITAL.—An anonymous donor has offered to defray the cost of a new hospital at Driffield, East Yorkshire. The site was given and a tender of £800 has been accepted.

ADDRESSES AND ORIGINAL ARTICLES

THE CONCEPTION OF "NERVOUS DISORDER."*

BY MILLAIS CULPIN, M.D. LOND., F.R.C.S. ENG.,
LECTURER IN PSYCHONEUROSES, LONDON HOSPITAL MEDICAL COLLEGE, AND IN MEDICO-INDUSTRIAL PSYCHOLOGY, LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.

THE differences of attitude within the ranks of those dealing with medical psychology are small in comparison with the differences between their general outlook and the outlook of those of our profession who do not deal with that subject. Most of us regard that difference of outlook as marking the clash of new ideas and old prejudices, and anyone familiar with the resistance that met the pioneers of psycho-analysis must agree that prejudices of a special quality were aroused by the nature of their discoveries.

Freud disturbed the peace of the world, but, having admitted that, I propose to show that the clash did not begin in 1895. The paper of my colleague Miss May Smith (on the Nervous Temperament) [1] led me to see how the pendulum has swung between the two schools represented at one time by vitalists and mechanists, at another by animists and iatro-physicists, nominalists and realists, and now by psychologists and neurologists, for, despite efforts at reconciliation, we must own that the outlooks of the last-named pair upon a case of hysteria are fundamentally different. Freud, who was primarily a neurologist, has admitted that his neurological knowledge was useless in his work upon those clinical problems that he has done so much to solve. What is the history of these attitudes and how have these problems come to be expressed in neurological or pseudoneurological language?

Such language cannot be avoided, and I find myself speaking of "nervous" patients, whilst agreeing with Dr. Johnson, who, in 1783, wrote of "a tender, irritable, and, as it is not very properly called, a nervous constitution." The language, too, possesses infinite possibilities. In an official report in 1911 on Telegraphists' Cramp, there occur "nervous instability," "neurasthenic temperament," "nervous disposition," "permanent nervous weakness," "nervousness of temperament," and "nervous type." Other variants are neuropath, psychoneurosis, and neuropsychosis, neurosis and neurotic, nervous debility, nervous exhaustion, nervous breakdown, and less well-known gems such as neuro-mimesis and cerebro-cardiac neuropathy. The growing popularity of neuritis—a comparatively rare disease in hospital out-patient practice—makes me fear that, like a good apple among rotten ones, "neuritis" will find itself among the throw-outs.

Here, then, is a terminology of inexactitudes that calls for inquiry as to its origin, and since it must express some general conception the history of the terminology and of the conception may be taken together. Here I shall make use of material from Miss Smith's paper.

Early Conceptions of Disease.

Starting with Hippocrates, we find the conception of the "physis," a term difficult to translate but appearing to mean the organism as a whole or perhaps something behind the organism, from which the word "physiologist" is derived. To quote from Brock:

> "The Greek masters of medicine observed, as do our experienced clinicians and practitioners still, and as our laboratory specialists increasingly fail to do, that the living organism under natural conditions acts primarily as a whole, and that the actions of its parts are naturally subordinated to this supreme function."

And again:

> "The physis is not secondary to the corpuscles, but a long way prior to and older than they . . . it is the physis which puts together the bodies of plants and animals by virtue of the faculties which it possesses . . . . And when they are born it provides for them by the use of, again, other faculties—one of affection and provision for offspring, one of companionship and friendship for kin."[2]

The physis and the Groddeckian "Es" are not far different, and the paradox emerges that few physiologists would grant the existence of that physis of which they are nominally the exponents.

Galen, who belonged to no school but leaned towards vitalism, gave currency to the humoral pathology of temperaments now enshrined in the words sanguine, choleric, phlegmatic, and melancholic, with the warning that "there is the creative power of nature that shapes parts according to the disposition of the mind."

Behind the humours were forces or influences, the elements as known to the ancients—earth, air, fire, and water. Here is an attempt to express disease and character traits in terms of known forces; we might smile at its simplicity, but there is a craving in us to continue this attempt, a craving that almost demands a physis of its own and so urgent that we again and again invent hypotheses whose only use is to satisfy it. Here is no question of pragmatic value; the function of the hypotheses is not to guide, or to subsume knowledge under a formula, but to satisfy the craving for an answer to the question "What makes the wheels go round?"

Against Hippocrates and the physis may be set up Asclepiades and the atoms. He was described by Brock as a man of vigorous intellect and will, who made up his mind what he wanted, and proceeded to get it, and such a man could have no use for the physis. He took Rome by storm with the theory that all vital functions resulted from the movement of atoms—the latest theory, just introduced to Rome by Lucretius. Brock compares him with one Abrams, of San Francisco, who utilised in a similar way the theory of electrons.

In Hippocrates and Asclepiades are exemplified two opposing attitudes that continue to this day. The medical psychologist, whose training has included a certain minimum of physiology and pathology, is content to stop short at a point where he believes these disciplines can carry him no further, and then attempts to understand his problems by a study of the organism as a whole. What has decided each of us in that attitude would be a delightful subject for investigation. May I recount the discovery of my own attitude? As a surgeon during the war, I was often invited to operate on a patient—with a deformed foot, let us suppose—of whom, after examination according to my training, I would say "No, I won't operate on him; he's doing that himself." It seemed quite simple, and if I had been called an animist my ignorance would have precluded emotional response; if a psychologist—well, we know what the English army did in Flanders. I cannot say why I

* Presidential address to the Medical Section of the British Psychological Society delivered on Dec. 17th, 1930.

did not think out what nerve centres were concerned in the mechanical production of the deformity; I did not trouble then and I do not trouble now. Yet we know that many of our colleagues would study such a case not as a reaction of the man as a whole, but as a "functional nervous disorder," and seek to understand it as a derangement of physiological mechanisms. The difference is fundamental and not to be smoothed away by hopes that some day we shall be able to explain one world in terms of another, to account for hysterical behaviour, disordered hopes and fears, political opinions and gastronomic likes and dislikes, by reference to the central nervous system.

Temperament.

Preserved chiefly by Arabian medicine, Galen's conception of temperaments played a great part at the revival of learning. Each advance in natural science was seized upon as the key to the temperaments and one primum mobile after another served to satisfy the eternal craving. Sometimes the new force was hailed as superseding animism or vitalism, sometimes it was an expression of it; sometimes the neophyte in history is entirely at sea in understanding what the disputants were driving at. Van Helmont (born 1577) made play with the archæus and its relations with fermentation. Sylvius followed with vital spirits that were prepared in the brain by a process of distillation, and used chemistry as the key to all problems. He ascribed most illnesses to acids and his ideas may survive in popular beliefs of to-day. Sprengel, the medical historian, writes: "Thus the most noble of all the arts became the prey of the imagination of the chemists." [3] Miss Smith showed how Stahl, after Harvey's discovery of the circulation of the blood, used the facts to give a mechanistic turn to his animism. "The mind adopts and maintains as its fundamental disposition that particular disposition which the movement of the humours through channels of a definite type has given to the pulse or circulation." The sanguine temperament was due to fluid blood flowing easily through channels broad and wide, resulting in harmoniously operating processes throughout the body.

Stahl has satisfied his craving, and lest we may think his modes of thought differ from those of our age we can find a parallel in 1908.

> "We know what a delicate structure the brain is, and if there be an anæmia, or a flushing (such as we can very often see for ourselves in the vessels of the skin) of the whole or part of the brain—for instance, one hemisphere or one or other of the ideomotor areas—what is more likely than that paresis of the corresponding limbs should result . . . This, in brief, is my view of the pathology of many hysterical disorders." [4]

Stahl was a shrewd observer, and so was this writer; each used for the same end the physiological knowledge of his day, and two centuries have made no difference in their modes of thought, nor in the results of their thinking.

Conveyance of Irritability by Nerves.

In opposition to Stahl's theories came the mechano-dynamic views of Hoffman, who translated the anima into an ethereal fluid, secreted principally by the brain, which draws it from the blood and distributes it by means of the nerves. This paved the way for the application of the physiology of Haller, who discovered the function of nerve in conveying irritability to muscle. According to Sprengel, the medical historian, he built up in terms of irritability his own theory of temperaments; thus "a feeble irritability, joined to an energetic fibre, constitutes the sanguine temperament." [3] My view is that Haller's theory of temperaments, to which he devoted 26 lines in a total of 566 pages, was a by-product to which he attached little value. He believed in the existence of a nervous fluid, a substance that passed along the actual nerves, and a *nervous theory* now sprang up by which "all the phenomena of life, especially the movements of the solids and the mixture of the humours are the results of the influence of the nervous force . . . all the diseases that appear to have as a cause an alteration of the humours depend upon the affection of the nervous system." [3] The nervous fluid, originally supposed to pass along the tubular nerves, has now become a nervous force difficult to distinguish from the old vital spirits. Schaeffer (1782), says Sprengel, "rendered great services to the nervous theory." "He demonstrated that even in the maladies called local the nervous force exercises a powerful influence; that, for example, cancerous ulcers and chronic cutaneous eruptions depend evidently upon feebleness."

What a development from Haller's discovery that nerve conveys irritability to muscle! Sprengel, writing in 1800, ends his chapter on Haller with more than a note of triumph.

> "The vivid light that the theory of excitation has for more than 20 years thrown upon dogmatic medicine has at last shown that all efforts made before then to explain the nature of organised beings were lacking in unity and went beyond the limits of our understanding. . . . Whilst all useless research upon the nature of the vital force has been avoided, there has been demonstrated in the most satisfying way the difference that exists between chemical or mechanical effects and the organic operations of the body. . . . It was reserved for the period in which we live to put an end to our uncertainties, to refute all the theories of the atomists, and to establish pure dynamics upon foundations for ever unshakable." [3]

He goes on to tilt at the still opposing theory of chemical materialism, and then into a discussion of materialism and the immortality of the soul, in which he quotes Voltaire, David Hume, Kant, and Priestley. Some serious matter beyond my understanding is involved in the advocacy of nervous force versus vital force. I cannot identify the nigger in the woodpile.

Sprengel gives, as part of the development of the theory of irritability, the views of Cullen, an Edinburgh physician who edited the translation of Haller's "First Lines," and he leaves us in no doubt as to the influence of Haller. The late Sir Clifford Allbutt was as emphatic about the neglect of Haller, specifically blaming Cullen and suggesting that all he knew about Haller was at secondhand. This contradiction can be understood. Cullen and his contemporaries used Haller's discovery as van Helmont, Sylvius, Stahl, and Hoffman used the discoveries of their day—to satisfy the eternal craving by yet another hypothesis; to Sprengel this was a magnificent feat, to Allbutt it bore no relation to science. He writes:

> "Into Cullen's other works some of the Hallerian teaching seems to have found its way, perchance by the eclectic Gaubius, but of the method and spirit of the great man we find little" . . . "for the hearer of Cullen's physiological lectures Haller might never have existed" . . . "this hollowness makes the medical writers of the latter half of the last [18th] century and the beginning of this seem farther from us than Galen himself, in whom, as F. J. Payne rightly insisted, the true spirit of experimental science was awake."

Whilst admitting all this is justified, we may differ from Clifford Allbutt and maintain that Haller was not neglected, but shamefully misused.[5]

Sprengelian enthusiasm crops up in a survey of medicine up to date by Seelig in 1925:—

> "These studies substituted for the old Hippocratic principle of the 'pneuma,' for the 'Archæus' of Paracelsus, for the 'vital spirits' of Sylvius, for the 'anima' of Stahl,

for all these vague meaningless things these studies of Haller substituted the simple principle of irritability, a force now recognised and experimentally demonstrable in all living tissue. . . . . We may well picture to ourselves the significance of the enunciation and proof of such a far-reaching fact. How many of us might covet the glory of accomplishing as much as this, even after a long life of labour." [6]

The Weltanschauung of 1800 is remote from us, but 1925 is near enough for us to inspect the wood-pile. Seelig's survey contains no reference to medical psychology—not even a thrust at Freud. The nigger emerges as the belief that nerve irritability made psychology unnecessary.

Now for Haller himself. His account of the physiology of nerve and muscle is as modest as it is logical, and he seems to attach to it no greater importance than to his other work. In the chapter on Conception, we read:—

"Thus much concerning the materials; but we are at a loss concerning the formation. . . . We readily reject such causes as a fortuitous concourse of atoms, the blind attractions between the particles of the nutritious juices, and the strength of ferments, inconscious of the reasons why they operate; the soul is certainly an architect unequal to the task of producing such a beautiful fabric; as for internal models, of which I never could conceive one clear idea in my mind, we shall refer them to those hypotheses which the desire of explaining those things, of which we are unwillingly ignorant, has given rise to." [7]

He recognises the craving and shuns it.

Neuroses.

Let us take up the thread again with Cullen. He ascribed to the brain a motive force upon which the strength of the body depends and from which, by its relation to the density and elasticity of the nervous fluid, results the temperament.[3] About 1780 he introduced a word whose subsequent history needs attention, and wrote: "I propose to comprehend under the title of neuroses all those preternatural affections of sense or motion which are without pyrexia, as a part of the primary disease." [8] Among his neuroses were (I quote from Clifford Allbutt) apoplexy and palsy, syncope, dyspepsia, hypochondriasis, tetanus, epilepsy, chorea, palpitation, dyspnœa, asthma, whooping-cough, pyrosis, colic, cholera, diarrhœa, diabetes, hysteria, hydrophobia. The Oxford English Dictionary gives later uses in the first half of the nineteenth century; lead colic was a neurosis, and (1843) "the diseases of function embrace the neuroses, hæmorrhages and dropsies."

In 1874 Maudsley broke new ground in speaking of "Insanity, epilepsy and some allied neuroses;" he equated *neurosis spasmodica* with the insane temperament, defining it as "a defective or unstable condition of nerve element, which is characterised by the disposition to sudden, singular and impulsive caprices of thought, feeling, and conduct." [9] Is this a physiological observation, has it enough practical utility to give it value, or is it another result of the eternal craving? Let us satisfy our own craving by seeking a reason why Maudsley made this excursion into the jungle of pseudo-neurology.

In the early seventies Huxley and Romanes, in setting the affairs of the world upon a mechanistic basis, seem to have wandered into metaphysics. Here is a brain; here are mental processes; what is the connexion? We are all metaphysicians enough to be compelled to believe that every mental activity is related to a neural activity, and Huxley gave to the former the name of psychosis, to the latter the name of neurosis. I shrink from this subject, for when I read that neurosis in the psychological sense signifies "a change in the nerve-cells of the brain prior to and resulting in psychic activity," [8] the attempt to think what that means makes me know what it is to feel like one of Janet's obsessional ruminators; but the Oxford Dictionary supports this definition with quotations from Huxley.

We must remember that this was a time of conflict, a time when Huxley carried on a public controversy with Gladstone about the authenticity of the story of the Gadarene swine. In such a conflict the ranks must close up, and perhaps the dominance of neurosis over psychosis had a significance now lost to us, for the field of theological controversy has out-of-the-way corners. My remembrance of the echoes of that conflict suggests that to admit the psyche could dominate the neuron might have been feared as tending to a final surrender and the acceptance of the story of the swine. We can only suspect the nigger in the wood-pile.

We may conclude that Maudsley was influenced by the philosophical tendency of the period when he gave us this new use of an old word. But his new use had a short reign. Neurosis now means anything the speaker likes, except insanity. When and how this change took place I do not know, but the processes that were once, as it were, the two sides of a shield are now widely separated in their clinical meanings. A man who is irrationally afraid to walk across a field, and acts accordingly, suffers from a neurosis, as does a man with mucous colitis, or an irritable heart; a man who irrationally believes that people are persecuting him, and acts accordingly, suffers from a psychosis—not a neurosis. It is all so very confusing. Huxley was once an examiner, and whoever is tempted to use the word clinically should imagine himself a candidate asked by that vigorous controversialist "What is a neurosis; how would you diagnose and treat it?"

This episode ends with that final triumph of the nineteenth century, the word "neurotic"—an embodiment of pseudo-physiology, unsound metaphysics, and moral condemnation. It often indicates that, since the patient's symptoms do not accord with our hypotheses, he is not really ill but only thinks he is.

The Nervous Temperament.

A "nervous temperament" needs mention. Galen taught nothing about it, but in 1805 Cabanis remedied the ignorance of two millennia by discovering that there are people with whom the nervous system predominates over the muscular. There must be differences of temperament according to the dominance of one or the other, so he devised a nervous and a muscular. The muscular disappeared, but the nervous is still popular enough to justify a brochure by Dr. Smith and myself in which we describe our efforts to identify it.[10]

It must not be thought that all this was unopposed. Sprengel's contempt for the chemists showed the existence of opposition, and the following from the preface to a book by Robert Whytt illustrates a defensive attitude not unfamiliar:—

"The disorders which are the subject of the following observations, have been treated by authors under the names of flatulent, spasmodic, hypochondriac, or hysteric. Of late, they have also got the name nervous which appellation having been commonly given to many symptoms seemingly different, and very obscure in nature, has often made it to be said that physicians have bestowed the character of nervous on all those disorders whose nature and causes they were ignorant of. [We can almost hear the voice of Dr. Johnson].

"If it should be said that to account for diseases from the sensibility or sympathy of the nerves, while we know not wherein these powers consist, is no better than referring them to a *facultas incognita*, or to the hypothetical motions or counter motions of the animal spirits, I shall only answer

that although we cannot explain why grief or joy should, by means of the nerves, excite a greater motion than usual in the vessels of the lacrymal glands, yet it is leading us to the truth and advancing one step farther in our knowledge, to show that the increased secretion of tears, occasioned by those passions of the mind, proceeds from this cause, and not from any compression of the lacrymal glands or their ducts, by the neighbouring muscles, as has been commonly supposed. And to ascend from small things to great, although Sir Isaac Newton did not pretend to explain the cause of gravity, yet he made no small improvement in physical astronomy when from this principle alone he accounted for the various motions of the planets, and banished the imaginary vortices of Descartes, which had been contrived, but unsuccessfully, to explain the phenomena of the solar system." [11]

Functional Nervous Disorder.

In the early part of the nineteenth century the substitution of nervous force for earlier prime movers was unchallenged. Ideas, however, must have become complicated, for in 1868 Beard's popularisation of neurasthenia was hailed as bringing order out of chaos. Beard's view (I quote from Savill) was that the primary factor is over-civilisation, which disturbs the balance between nerve waste and repair, and results in a weakened and unstable nerve force. This, however, is almost the last appearance of the old favourite, and it gave place to a weakened or exhausted nervous system. This survives alongside the newer conception of "functional nervous disorder," which draws upon our increased knowledge of anatomical detail to make a last defence against anything savouring of the heresy of animism.

Yet a sound physiology has existed side by side with these perseverations, and in 1811 Bell wrote an account of the central nervous system that rested entirely upon observation and rigid deduction, with no reference to nerve force or other speculative salve for our ignorance. He wrote:—

"The operations of the senses in rousing the faculties of the mind, and the exercise of the mind over the moving parts of the body, is through the brain and nerves." [12]

Such is the attitude of modern physiology, which is content to regard mind as a useful abstraction and leave it at that. The old craving is, however, still at work, and in a film shown in this country, and recording the experiments of Pavlov, the last picture gave us the news that "Man's behaviour is but a series of conditioned reflexes." Dr. Smith has drawn attention to the modern Count Fosco who wrote, concerning endocrines:—

"These glandular predominances are determining factors in the personality, creating genius and dullard, weakling and giant, Cavalier and Puritan. All human traits can be analysed in terms of these because they are expressed by them." [13]

I absolve my physiological friends from any share in these attempts to pour the products of a recent harvest into a very ancient bottle.

Minor Psychoses.

The theory of "nervous disorder" is a parasitic growth upon scientific medicine; hopes that it may at some future time find more legitimate connexion are a hindrance when we treat them as present realities and, like Sabinus and his sect, invent improbable explanations of things that do not happen.[14] The theory has become limited to a narrower sphere since the days of Cullen, but within that sphere we still give validity to speculative pathology. The acrimonious controversy in which Herbert Page, a sound animistic surgeon, proved, in opposition to Erichsen, that "railway spine" did not depend upon obscure lesions of the cord but was a reaction of the man as a whole, took place in the 'eighties. When the Great War produced a record crop of minor psychoses, there sprang up the theory of shell-shock, and men with hysterical conditions received wound stripes for physical injury. We read about tiny hæmorrhages into the brain, of synapses separated by the force of high explosives, of the effect of gases upon the blood and the nerves. Our friends the enemy produced the same theories. Then, as Ferenczi wrote, "silence fell upon the mechanistic camp." In order that the war might continue, the phrase shell-shock was prohibited, and theories about it were buried with as little fuss as possible. After the war Herbert Page, then an old man, wrote to me a pathetic letter, in which he said that all the symptoms of shell-shock would be found in his book on "Railway Injuries," but that the lesson he had tried to teach had been forgotten. Railway spine survives as traumatic neurasthenia, and we read medical evidence that nerves are shattered as the result of an accident that produced little or no demonstrable trauma.

Glenard's speculations on enteroptosis as the cause of neurasthenia led to pexies innumerable. At one stage it was laid down that no neurasthenic patient should be told he had a movable kidney; he was supplied instead with X ray films with arrows on them showing where his colon and stomach had slipped to Only recently has it been announced that virginal visceroptosis should not be operated upon. The occupational neuroses—nystagmus, cramps, and such like—are supposed to produce nervous symptoms; which is as if the spots produced the typhoid. It is amusing to read of the epidemic of night-blindness in the Continental armies, to which there are some 40 references in the literature, which had cardiac irritability among its many causes. It is not amusing to find night-blindness competing with cardiac instability as a cause of disablement in miners' nystagmus, which costs us over £650,000 per annum in compensation.

My statistical friends do sums about the incidence of sickness under the Insurance Act. You might not think that has any relation to nerve irritability, but here is the sickness experience of printers: "In long-period illness the diseases grouped under the nervous system are the most consistently important. They produce throughout insured life between 30 and 40 per cent. of all the days of disablement and approximately a quarter of all the claims." Turning to the specification of "Diseases of the Nervous System" we find: thrombosis, embolism, insanity, neurasthenia, hysteria, neuritis, epilepsy, neuralgia, nervous debility, vertigo, myelitis, insomnia, chorea, faints, paralyses, tabes, cerebral hæmorrhage.[15]

Having brought the story up to the present day, I hope I have carried out a part of the task I began with—to trace the history that lies behind some modern differences of attitude. I have, however, omitted half the task as being beyond my powers. Some may regard as entirely new the modern observations and theories upon which we, as medical psychologists, are in general agreement; some may see a continuity of descent through earlier lines of thought, and the continuity of the conflict of attitudes makes me incline to the latter view. But the inquirer will meet at every period an emotional emphasis upon differences of theory, for which the contending parties offer no explanation and that may depend upon the spirit of the period as well as upon the fundamental tendency of mankind to externalise his inner conflicts and difficulties. It is this tendency, you will agree, that makes the public cling so strenuously to the belief in mechanical forces as responsible for psychological troubles.

(*References at foot of next page.*)

TREATMENT OF LOBAR PNEUMONIA BY FELTON'S SERUM.

A PRELIMINARY REPORT BASED ON FIFTY-EIGHT CASES.*

By

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WHEN it was recognised that more than 90 per cent. of the cases of pneumonia were due to infection by the pneumococcus it was hoped that a specific antiserum might help in the treatment of the disease, but until recently the available sera have proved of little value.

Extensive investigations have thrown light upon the subject. Researches carried out in South Africa and in New York showed that there are several distinct serological types of pneumococci, and that antisera agglutinate their homologous strains and protect susceptible animals against infection by them. Three specific groups of pneumococci are recognised, Types I., II., and III. Strains which do not fall into these divisions are classed together in a heterogeneous group IV. or "x." Cooper and others have now shown that group "x" may be subdivided into a large number of specific types. To date some 22 different serological strains have been recognised.

Types I. and II. are responsible for 50–75 per cent. of the cases of pneumonia, but the exact proportion varies in different places at the same time, and at different seasons in the same place. Type III. is the least common but the most virulent; group "x" is more common and less virulent than III.; the virulence of I. is about the same as "x," while that of II. is intermediate between these and III.

The first requisite in the treatment of pneumonia by antiserum is the detection of the type of pneumococcus active in the particular case; the second is the supply of the corresponding antiserum, for it is useless to administer an antiserum which does not correspond to the active organism. At present effective antisera are only available for Types I. and II. pneumonias, but these infections constitute more than half the cases. The serum is antibacterial, not antitoxic—the pneumococcus has no demonstrable exo- or endo-toxin—and its function is to supply opsonins, agglutinins, precipitins, &c., which hasten the phagocytosis and destruction of the pneumococcus. It does *not* cause quicker resolution of the pathological lesions in the lungs, prevent death from cardiac failure or anoxæmia, neutralise non-specific poisons in the blood, or obviate the necessity for surgical interference in empyema.

The detection of the infecting type is a task which necessitates the loss of valuable time, typing from the sputum requiring nearly 24 hours, and from blood or lung cultures even longer. This is unfortunate, for the success of serum treatment is well known to depend upon *early* administration. Our practice, in consequence, has been to institute serum treatment as soon as the clinical diagnosis is made in *every* case of pneumonia, and to continue until the patient is better or we know that the type of organism is other than I. or II.

The series now recorded is too small for any definite conclusion as to the value of serum treatment in pneumonia to be reached, but in view of the importance of the subject we present our present figures for the consideration of the profession. Our results are gratifying in so far as they suggest that the use of serum has lessened, to an appreciable amount, the mortality of the disease in our practice, but too much must not be expected from serum treatment. Death, in pneumonia, may result from many causes, cardiac and respiratory failure, intoxications other than pneumococcal, or complications, side-issues of the infection, or the result of associated infections, or antecedent visceral disease. Against these the serum has no direct response.

We are indebted to the kindness of Dr. J. G. M. Bullowa, clinical professor of medicine in the University of New York, for our supply of Felton's serum, manufactured by the Lederle Antitoxin Laboratories; to the managers of the Royal Infirmary, and Dr. A. S. M. Macgregor and Dr. W. G. Clark, for their cordial coöperation in our work; and to the Scottish Branch of the British Red Cross Society for the financial arrangements. To all of these we offer our sincere thanks. We must also offer our thanks, for their personal assistance, to J. G. M. Bullowa, Isobel Brown, G. Cooper, L. D. Felton, Ian Grant, F. Griffith, J. S. Haldane, D. Ross, and Geoffrey Fleming; and to our wards Sisters, I. N. Prentice and E. Esplin.

Causes of Death in Pneumonia.

In pneumonia death may result from cardiac failure, anoxæmia, intoxications, or complications.

CARDIAC FAILURE.

The exact causes of cardiac failure are not yet accurately appreciated. It is true that granular, fatty, and hyaline changes are usually found post mortem in the myocardium, and that inflammatory changes are common. It is recognised that additional strain is thrown upon the right heart by the consolidation in the lungs, and that the blood pressure falls, sometimes to an extraordinary degree, during the course of the disease, but it is not clear how much of the circulatory difficulties are due to failure of the vis a tergo, and how much to disturbances in the peripheral circulation, from vaso-motor paresis. Both factors must be borne in mind. In any case it is essential to lessen the strain upon the heart from the commencement of the illness.

The chief indications are rest in bed and full nursing. Sleep is required, and there must be no

* The expenses of this mass test of Felton's serum have been borne by a grant from the Scottish Branch of the British Red Cross Society to the Royal Infirmary for the purposes of this investigation.

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hesitation in securing it, if necessary, by the help of sedatives, of which we have found morphia given hypodermically the most helpful. It is true that its administration has been shown to lessen the respiratory rate to a slight extent (5 per cent.), and in consequence the oxygenation of the arterial blood, but this contra-indication is of less moment than the absence of rest and sleep, and can be remedied by the measures suggested for the treatment of anoxæmia. The occurrence of pleural pain is an additional indication.

Food, too, is essential and must be fluid. Diluted milk forms the staple, and readily digested carbohydrate (Horlick, Benger, &c.) can be added, or sugar in weak tea or coffee. Any distension of the abdomen must be remedied by alteration of the diet, and the use of rectal tube, enemata, and pituitrin.

Stimulants are generally required at some stage of the illness. Alcohol is said to be inert as a cardiac stimulant, but its effects in dilating the superficial vessels of the body and so increasing the heat loss, depressing the higher cerebral centres and so tending to ensure rest, and as a food which needs no digestion, are often useful. It should always be given to alcoholics. If the pulse lessens in rate and increases in value, if cold extremities tend to warm, if restlessness and delirium decrease, and the tongue becomes more moist, its administration is proving helpful (Murchison). The digitalis group are useful in moderate doses, and can be aided by caffeine and theobromine. Pituitrin should be exhibited if there are any suggestions of vaso-motor failure.

ANOXÆMIA.

The appearance of cyanosis is a clear indication of the presence of anoxæmia which occurs, to some extent, in every case of pneumonia. It is due to the lessened pulmonary area, the passage of blood through unaerated pulmonary capillaries, the lessened diffusion of gases from exudate in the pulmonary alveoli, and the shallow breathing which characterises pneumonia. It may be augmented in special cases by the existence of other pulmonary troubles such as bronchitis and pleural effusion. It has been shown by arterial puncture that anoxæmia may be extreme, the oxygen saturation being reduced to 60, 50, 40 per cent., or even lower, and that the administration of oxygen remedies the fault quickly and successfully. We have all seen such treatment remove, or at any rate lessen, cyanosis.

If the administration of oxygen remedies anoxæmia, anoxæmia should not be permitted to arise. In the past oxygen administration has been offered too late. Oxygen should be given in suitable amount continuously throughout the illness.

We have not had the opportunity of using an oxygen chamber. With it a concentration of 40-50 per cent. is used, generally the lower figure, with beneficial results. A concentration of 60 per cent. is deemed unsafe, but 40 per cent. has no ill-effect upon healthy persons sleeping under its influence. We have had to use other methods, Haldane's mask if possible, or the nasal tube. If these prove impracticable from delirium, &c., we exhibit oxygen freely through a funnel suspended above the patient's mouth. In consequence in this series cyanosis has rarely been severe.

THE INTOXICATIONS.

The intoxications of pneumonia are only in part due to the specific poisons of the pneumococcus, for it seems clear that anoxæmia and autolysis of the pulmonary lesions must interfere with normal metabolism. The prompt removal of these abnormal products is indicated and can be facilitated by increased elimination through the bowel, the skin and the kidneys. The first indication is the supply of sufficient fluid which may be given with the milk or separately as lemonade, soda water, &c. We have too, regularly administered potassium citrate (80–160 grains per diem) and liquor ammonii acetatis (4–8 drachms). The ammonia increases the formation of urea which acts as a diuretic, while the potassium salt also augments the urinary output, and, in addition, tends to increase the available alkali of the blood (Cushny).

It is impossible in this paper to discuss in full the vexed question of the acid-base balance in pneumonia. It has been known for long that in pneumonia there is as a rule a diminution of the CO_2 content of the arterial and the venous blood, though there is no appreciable lessening of the CO_2-combining powers of the blood. Various observers, using electrometric methods or indirect methods of measuring the pH of the blood, have concluded that it lies either within the somewhat discrepant range of normality or is definitely shifted towards the alkaline side. On the other hand, it has been repeatedly shown that the urine during the febrile stage of the disease is definitely acid, from an increased excretion of organic acids and acid salts. The ammonia output, too, is also increased.

In this series, in which alkalis were being exhibited, the reaction of the urine was noted accurately in 34 patients who recovered from the illness. The urine was alkaline to litmus before the termination of the fever in 9 cases on the day of termination of the fever in 6 cases; on the first day afterwards in 6 cases; on the second day in 4 cases on the third day in 4 cases; and subsequently in 5 cases. In 4 fatal cases the urine was alkaline before death.

On the available evidence we are inclined to trust the physiological evidence of the kidneys, which are clearly compensating an increased acidity of the tissues, rather than the evidence of the chemical examination of the blood. We continue the administration of the above-mentioned drugs for several days after the cessation of the fever, as it is known that the increased nitrogen output continues for several days after the fever has passed.

The Pneumococcal Intoxication.

On the admission of a patient blood is at once taken for culture and, immediately afterwards, a dose of 10,000 units of Types I. and II. serum is given intravenously. As a rule we have given a similar dose every eight hours until the fever fell below 102°, but we have not adhered strictly to this rule, giving more or less frequent doses according to the general condition of the patient rather than to the height of the fever. The signs of toxæmia, delirium, exhaustion, incontinence, &c., are more dependable criteria. In all we have given 348 doses to 58 patients, an average of 6, the extremes being 26 and 1.

We have not followed the bacteriological evidence as to type strictly, for we have found that the first examination of the sputum is not necessarily correct, presumably from contamination by bacteria derived from the mouth where, as is well known, pneumococci, most frequently group "x," are often present in healthy individuals. In one early case, which ultimately proved fatal, we unfortunately ceased administration of the serum on the sputum report of a group "x" infection, until the results of the blood culture proved that the infection was Type II. Cultures from the blood or lung are more likely to be accurate. Latterly we have continued the use of

serum in every case until satisfied by *repeated* examinations that the infection was *not* Type I. or II.

In 4 cases the sputum report was group "x," while blood culture showed Type I. in 2 cases, and Type II. in 2 cases. In 3 cases with negative blood cultures the first sputum reports were group "x," subsequent examinations showing Type I. in 1 case, and Type II. in 2 cases.

The administration of large doses of serum, intravenously, necessarily entails the risk of anaphylaxis, but the Felton serum is manufactured in such a way as to minimise this risk. It is derived from the serum protein of immunised horses by precipitation of the globulin antibody-carrying fraction in a large bulk of distilled water, the precipitate being redissolved in concentrated solution so that the therapeutic dose measures about 10 c.cm. A conjunctival test of sensitivity is made before the first injection.

In this series anaphylactic phenomena occurred in six cases. Immediate reactions occurred in two cases, succeeding the administration of the first dose. The patients became very short of breath and cyanosed, and the pulse failed, but these symptoms rapidly disappeared on the exhibition of adrenalin and atropine. In one case a second dose produced a similar but less severe reaction; the other patient did not require a second dose. In two cases urticarial eruptions were noticed a few hours after the first dose of serum. Late reactions occurred in two cases. In one patient who had had ten doses pyrexia, accompanied by arthritis, ensued on the twelfth day of illness and persisted for seven days. In the other case pyrexia, accompanied by inguinal adenitis, occurred on the fourteenth day of illness and persisted for eight days. This patient had had 11 doses, all given through the veins of the arms. Neither patient was acutely ill.

Discussion.

During the period of this investigation 60 cases of pneumonia were admitted into the wards. Of these, three patients were not given serum, for various reasons; they all made a good recovery. The other 57 patients were given serum. To these we have added another case, admitted in December, 1929, who received serum which had been presented to us by Dr. Bullowa. Of this series of 58 cases one patient (Type III.) died within 24 hours of admission. The others survived for at least 48 hours.

This series of cases is too small for any accurate conclusion as to the value of the treatment to be reached. We have no definite standard for comparison, but we show the results in an *untyped* series treated by us in the same wards during the last 20 years.

It is well known that the mortality of pneumonia varies considerably from year to year according to

TABLE I.—*Mortality per cent. in Pneumonia not Treated with Serum.*

	Osler.	Cecil.	Cole.	Bullowa.	Ferguson and Lovell.
Type I. ..	24·1	32·6	—	31·0	26
,, II. ..	37·7	54·6	—	30·0	20
,, III. ..	53·7	28·6	43·0	—	—
Group "x" ..	22·2	38·3	12·8	—	24·6

the character of the epidemic; and varies, too, with the age and sex and constitution of the patients. In our old series the males numbered 73·3 per cent., in the new series 65·5 per cent. In the old series the patients under 40 years of age numbered 76·2 per cent., in the new series 75·8 per cent.

The patients were not a picked group. Four showed a positive Wassermann reaction; one had aortic valvular disease, and one fibrillating auricles; one suffered from phthisis; two had chronic otitis media; one had rheumatoid arthritis; three were clearly chronic drunks. The virulence of the disease was at least of average severity. The fever lasted for eight days or more in 11 cases, and touched or exceeded 103° F. in 23 cases. The pulse-rate touched or exceeded 120 in 27 cases. The respirations numbered 40 or more in 33 cases. The blood pressure fell below 100 mm. Hg in 13 cases.

There is great difference in the mortality of the various types of pneumonia as shown by different observers in Table I.

Our own results are given in Table II.

TABLE II.

	UNTYPED SERIES, 1906–29, omitting the war years, 1916–17–18.				TYPED SERIES, 1930. Treated with serum.		
Age.	Male.	Died.	Female.	Died.	Male.	Died.	Female*
0–09	77	4	45	3	—	—	—
10–19	151	4	55	2	8	—	2
20–29	155	16	43	5	13	1	8
30–39	99	22	28	7	8	1	5
40–49	60	27	29	6	6	3	3
50–59	49	28	14	5	2	1	—
60–69	35	20	6	2	1	—	2
70–79	7	6	3	1	—	—	—
—	633	127	223	31	38	6	20

* No deaths.

	MORTALITY. Without serum. Cases.	Deaths. %	With serum. Cases.	Deaths. %
All cases	.. 856	..... 158 (18·46)	58	..... 6 (10·3)
Males	.. 633	..... 127 (20·06)	38	..... 6 (15·7)
Females	.. 223	..... 31 (13·9)	20	 0

The reduction in the mortality is thus considerable.

The incidence of the different types of pneumococci in a series of cases in Glasgow during the year 1930 is shown in Table III.

	Total series.	Serum treated series only.
Type I...	.. 68	15
,, II...	.. 88	26
,, III...	.. 3	1
Group "x"	.. 41	13
	200	55

Felton's serum is only active against Types I. and II. infections; it has no therapeutic value in Type III. and group "x" infections. Of the 15 Type I. infections 1 patient died; of the 26 Type II. 2 patients; of the Type III. the only case; of the 13 group "x" infections 2 patients. Grouping the Type I. and II. infections together and contrasting the results in the other groups the figures are:—

Types I. and II. 41 cases .. 3 deaths .. mortality 7·3 per cent.
Other types .. 14 ,, .. 3 ,, .. ,, 21·4 ,,

We have not, as yet, any records of Type I. and II. infections treated in this country without the aid of Felton's serum, save those of Ferguson and Lovell, but the contrast between the gross mortality in our old and our new series, and the considerable difference between the mortality of the Types I. and II. cases, and the others (*upon which this serum has no effect*) in our new series, are sufficiently suggestive of the value of Dr. Felton's addition to our therapeutic armamentarium.

The difference in the mortality of pneumonia in America and at home requires investigation. Dr. Bullowa suggests that our patients come under treatment at an earlier stage

of the disease than is the case in New York. In this series the serum treatment of Types I. and II. infection was commenced, so far as we can ascertain, within 48 hours of the onset of the illness in 16 cases; within 72 hours in 7 cases; within 96 hours in 10 cases; within 120 hours in 6 cases; within 144 hours in 2 cases. Two of the Types I. and II. patients who died received serum within 48 hours of the onset and one within 72 hours.

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A REPORT ON LOBAR PNEUMONIA: TREATMENT BY CONCENTRATED ANTISERUM

BY THE PHYSICIANS TO THE ROYAL INFIRMARY, EDINBURGH.

IN the latter part of 1929 a quantity of concentrated antipneumococcus serum was made available by the Medical Research Council for clinical trial in the Royal Infirmary.

In order to show that a remedy is of benefit in the treatment of lobar pneumonia, it would be necessary to demonstrate that it is capable of (*a*) reducing the case-mortality; (*b*) modifying the course of the disease; or (*c*) lessening the severity of the illness. For various reasons the matter is not as simple as it would appear at first sight. Effects on the case-mortality present special difficulty, since the death-rate in pneumonia may vary within wide limits not only in different places, but also in the same institution from year to year under apparently identical conditions. Deductions from small series of figures are always unsafe, and especially in such a subject as pneumonia, where the course of the disease is influenced by so many factors, such as the age of the patient, his previous health, habits, &c. The severity of the illness cannot be readily measured,[1] and experience shows that even those patients apparently extremely ill may recover without specific treatment.

Scheme of the Investigation.

At the outset of the investigation it was decided to give serum treatment without distinction to every alternate case of lobar pneumonia admitted to each of the eight medical charges in the Royal Infirmary. The remaining cases were to be treated in the usual way and were to serve as controls. This plan was carried out for about two and a half months and the cases belonging to this period are designated by the letter B. (before) in Table I. Later, owing to the small quantity of serum available, instructions were issued to choose the more seriously ill patients for treatment with the antiserum. The later cases are indicated by the letter A. (after). As has been pointed out, the subjects in the earlier period (B.) were quite unselected, so the serum and control cases are strictly comparable. In the second period the serum groups contain a larger proportion of the more seriously ill. The non-serum controls in this group (A.) include the less severe cases. Certain patients who were practically moribund when admitted to hospital were not given serum and are shown primarily amongst the controls.

In order that the serum cases and the controls should satisfy statistical requirements, the two groups should be of approximately equal size and as nearly similar as possible in such matters as the age of the patients (see Table III.), their physical state, the day on which they were admitted to hospital (Table IV.), &c. Owing to the selection of more severe cases for serum treatment during the second period, the non-serum cases in this group are not strictly comparable. The results obtained in the two periods (B. and A.) are so similar, however, that it would seem justifiable to group them together for purposes of analysis. This, of course, would tend to operate to the disadvantage of the serum results.

The concentrated antipneumococcal serum employed was that of Felton prepared by Messrs. Lederle of New York. It was active only against organisms of Types I. and II., and contained 10,000 units

TABLE I.

Group.	Day of crisis. 3	4	5	6	7	8	9	Lysis or over 9.	Deaths.	Age at death and remarks.	Totals.
S. I. B.	—	1	4 (*15*)	—	1	—	1	1	—	—	8 } 12 } 29
S. I. A.	—	1	2	—	—	1	—	—	—	—	4 }
C. I. B.	—	—	2	2 (*15*)	1	2	—	1	4	*27*, *61*, D. *62*, *64*, A.	12 } 17 }
C. I. A.	1 (*11*)	—	—	1	1 (*13*)	1	—	—	1	*60*.	5 }
S. II. B.	1	—	1	—	1	1	2	2	4	*36*, *38*, A. *49*, *52*, K.	12 } 17 } 41
S. II. A.	—	1	1	1	1	—	—	—	1	*21*, P.	5 }
C. II. B.	—	—	—	1	1	—	—	2 (*63*)	6	*34*, N. *52*, M. *57*, M. *60*, M. *62*, M. *76*.	10 } 24 }
C. II. A.	—	1 (*11*)	1	2	1	2	1	2	4	*24*, B. *51*, *54*, U. *64*, F.	14 }
S. III.	—	—	1 (*60*)	—	1 (*60*)	—	—	—	—	—	2 } 2
C. III.	—	—	—	—	—	—	—	—	—	—	— }
S. IV.	—	—	2	1	2	—	1	—	1	—	7 } 17
C. IV.	—	1 (*14*)	1	—	—	—	—	5 (*15*)	4	*19*, St. *60*, *64*, L.	10 }
Untyped S.	—	—	—	—	—	—	—	1	1	*17*, M.	2 } 17
Untyped C.	—	—	1	1	3	2	1	3	4	*50*, M. *54*, M. *68*, M. *76*, M.	15 }
Summary of Types I. and II.											
S. I. + S. II.	1	3	8	1	3	2	3	3	5	—	29
C. I. + C. II.	1 (*11*)	1 (*11*)	3	6	4	5	1	5	15	—	41

Group.—S. = Serum ; C. = Control. B. = before ; A. = after. Figures in *italics* represent ages.
Remarks.—A. = alcoholic ; D. = chronic bronchitis and diarrhœa. K. = meningitis and pericarditis ; P. = pericarditis and extension ; N. = nephritis ; M. = died within 24 hours of admission ; two were unconscious when admitted ; B. = bronchitis and asthma ; U. = ulcerative endocarditis ; F. = auricular fibrillation ; St. = mitral stenosis ; L. = leukæmia.

each dose (5 c.cm.). As it has been shown that the earlier the serum can be administered the more favourable is the result likely to be, it was decided that the initial dose of serum should be given to the patients as soon as the diagnosis had been established and without waiting till typing of the organism had been completed. This resulted in a number of pneumonias of Types III. and IV. receiving one or more doses of serum before information regarding the type was available. This waste was more than outweighed by the advantage of being able to begin treatment earlier in the other cases. Table II. gives the number of doses received by patients in the different classes. Before serum was administered to a patient inquiry was made as to whether any

TABLE II.

—	Number of doses of serum given. 1	2	3	4	5	6	10	12
SS. I. + S. II. non-fatal	4	9	3	6	—	—	1	1
SS. I. + S. II. fatal	—	2	2	—	—	1	—	—
S. III.	1	1	—	—	—	—	—	—
S. IV.	2	3	—	1	1	—	—	—
Untyped	—	2	—	—	—	—	—	—

serum had previously been given, and the presence of undue sensitivity was sought by placing a drop of normal horse serum in the conjunctival sac. During the period covered by the inquiry 106 cases of lobar pneumonia came under review. For various reasons (e.g., absence of sputum) typing was not carried out in 17 of the subjects. The remaining 89 cases were distributed as follows : Type I., 29 ; Type II., 41 ; Type III., 2 ; and Type IV., 17. The serological type of the pneumococci present in the sputum was determined by the usual macroscopic agglutinate method after mouse inoculation. Details of the technique and an account of the type incidence in Edinburgh during the years 1929-30 are being published by J. M. Alston and D. Stewart.[2]

LUNG PUNCTURE.

In certain cases in this series—most frequently in those admitted at an early stage in their illness—no sputum could be obtained for several days and occasionally not until actually after the crisis. By puncture of the lung substance over the affected lobe it was found that in the majority of such cases a pure

TABLE III.

—	Age of pneumonia cases types I. and II. 10–19	20–29	30–39	40–49	50–59	60–69	70 +	Totals.
S. I. + C. I. non-fatal	4	5	9	2	4	—	—	24
S. II. + C. II. fatal	—	1	2	1	1	—	—	5
C. I. + C. II. non-fatal	7	7	4	4	3	1	—	26
C. I. + C. II. fatal	—	2	1	—	4	7	1	15

culture of the pneumococcus could be obtained. The technique of this procedure and the results obtained have already been recorded.[3]

BLOOD CULTURE.

In 51 cases blood culture was performed. Ten cubic centimetres of whole blood was removed from the arm by venepuncture and was immediately transferred to flasks containing 50 c.cm. of phosphate broth (pH 7·6). The flasks were then incubated for 72 hours, being examined at daily intervals. A

TABLE IV.

—	Day of disease on admission to hospital. 1	2	3	4	5	6	7	8	Unc.	Totals.
S. I. + S. II. non-fatal	1	4	7	6	3	2	—	—	1	24
S. I. + S. II. fatal	—	—	2	—	2	—	—	1	—	5
C. I. + C. II. non-fatal	—	4	6	5	6	4	1	—	—	26
C. I. + C. II. fatal	—	—	2	3	3	2	1	1	3	15

Unc. = Uncertain.

positive result was recorded in 6 of the 51 cases, in each case a pure culture of pneumococcus being obtained corresponding in type to that found in the sputum. No growth of pneumococcus was noted in 45 cases.

The majority of the blood cultures were done in cases that were admitted early in the investigation,

and it is interesting to note that death occurred in all cases where a positive culture was obtained; while no patient who survived showed a positive blood culture.

Analysis of Results.

CASE MORTALITY.

A summary of the findings is given in Table I. The total figures are so small that it hardly seems justifiable to express the results as percentages. The distribution of the deaths, however, is striking. It will be observed that amongst the Type I. cases none of those who received serum died, while there were five deaths in the control group. Similarly amongst the Type II. pneumonias there were considerably fewer deaths in those treated with serum. At first sight this would appear to be convincing evidence in favour of the serum, but closer scrutiny modifies this view. It is well known that the death-rate in pneumonia increases with age, rising from about 5 per cent. under 20 years, to about 100 per cent. over age 70.[4] The serum cases and the controls are not closely similar in matter of age, since only the latter group contains subjects of 60 years and over (Table III.). In the first two groups all the patients of this age died with the exception of one. It will be noticed that though two cases of 60 years of age affected with pneumococcus of Type III. survived their illness, all the others of like age in Group IV. and in the untyped class ended fatally. In addition, it will be observed that several of the patients who did not receive serum died within a few hours of reaching hospital, two were moribund on admission, and others were extremely ill and may have been adversely affected by being moved to the infirmary late in the course of the disease. When consideration is given to these facts the smaller proportion of deaths amongst the serum cases would appear of less importance.

EFFECT OF SERUM TREATMENT ON THE COURSE OF THE DISEASE.

Duration of the fever.—As is well recognised, it is often difficult to ascertain exactly the day upon which the pneumonia commenced. A large proportion of the subjects in this investigation had suffered from some "cold" or catarrhal condition for a week to a month before the onset of symptoms which could be definitely recognised as pneumonia. The earliest signs of the major disease may either be those of an abrupt febrile invasion, or local symptoms referable to the chest. There is thus often an element of doubt as to the exact duration of the illness, but every effort has been made to minimise this. The day of the disease on which the patients of Groups I. and II. came under treatment is shown in Table V. It will be observed that the majority of the patients were not admitted to hospital until after the third day of their illness.

TABLE V.—*Fall of Temperature in Relation to First Dose of Serum.*

Interval to crisis.	Day of disease on which serum given.							Totals.
	1	2	3	4	5	6	Unc.	
1 day and under .	—	1	2	3	3	—	—	9
2 and 3 days ..	—	1	2	2	—	3	—	8
4 days and over..	1	1	2	1	1	—	1	7

A great deal of information regarding the duration of the febrile period in this disease is available as a standard for comparison. Many analyses have been published showing the proportion of cases which end by crisis on different days of the disease.[4] From these it is evident that, while in the majority of pneumonias the temperature begins to fall from the sixth to the eighth day, there are many which run a shorter course. The accompanying chart compiled from twelve series of records shows the percentage distribution of the crisis in 7442 cases together with the limits of the figures given by the individual observers (shaded area). Taking the records of all the pneumonias of Types I. and II. together and omitting the fatal cases, it is found that 24 were treated with serum and 26 are available as controls. The average age of the non-fatal serum cases is 33·8 and that of the surviving controls 32·0 years, so that the two groups are fairly comparable. When the duration of the illness is examined, there is at once apparent a very marked difference between the two groups, especially in the case of Type I. No less than 50 per cent. of the serum cases ended critically on or before the fifth day, while the corresponding figure for the controls is only 19·2 per cent. (The value for the 7442 cases mentioned above is 26·0 per cent.) When it is considered that the later serum cases include some of the more severely ill patients, and that eight of the patients did not commence treatment until the fifth day or later, the result is even more striking. Experience has shown that abortive forms of the disease occur more frequently amongst young individuals, cases of three or four days' duration being not uncommon amongst children. In order to give weight to this point, the ages of all patients under 15 years of age are shown in italics in Table I. It is probable that the figures for the control group gain advantage from the inclusion of two patients aged 11 who had a crisis on the third and the fourth day respectively. The accompanying chart shows the percentage distributions of the serum cases and the controls according to day of crisis. Each group includes a single third-day crisis—a proportion to be expected from the published tables. The values for the fourth and especially for the fifth day in the case of the serum group are greatly in excess of expectation, while the later values are necessarily low. In the case of the control series, the figures lie fairly close to the average values within the limits expected. Of the 50 non-fatal cases of Types I. and II. it is well to notice that 18 who received serum and 15 controls were admitted on or before the fourth day, 3 serum cases and 6 controls on the fifth day, and 3 serum cases and 5 controls after the fifth day (Table IV.). Though the lateness in beginning specific treatment in certain cases would affect the total number of early crises, the two groups are fairly similar as regards time of admission to hospital. From the evidence submitted, it would seem a fair deduction that the administration of serum has definitely shortened the febrile period of the disease in a considerable number of cases. Table IV. shows the number of days which elapsed from the time of giving the first dose of serum to the onset of the crisis. No less than 9 of the cases who were admitted up to the fifth day of the illness had a definite crisis within twenty-four hours (second day, 1 case; third day, 2 cases; fourth and fifth day, 3 each). On the other hand, early administration of the serum is not necessarily followed by abortion of the disease. For example, the patient (Case 2) who commenced treatment within 24 hours of the onset of his illness and received 12 doses of serum did not have his crisis until the sixth day.

EFFECT OF SERUM ON THE SEVERITY OF THE ILLNESS.

Height of the fever.—Thermal reactions following the administration of serum have been reported.[5] These have not been seen in this series of cases. In a number of instances the giving of serum has been followed by a slight temporary fall of temperature of one or two degrees, but variations of this magnitude are not uncommon during the course of pneumonia. One or two cases appear to have a pseudo-crisis, but where

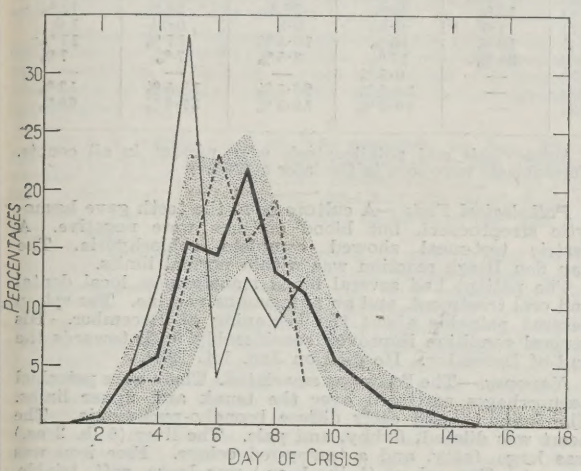

Chart shows the relative percentage distribution of the day of crisis in 7442 pneumonias which ended by crisis. The average values are shown by the heavy black line. The extreme limits given in the 12 different series from which the cases were drawn are shown by the shaded area. The control cases in this series (interrupted line) fall within expected limits. Serum cases (fine line) show a large percentage of crisis occurring on the fourth and fifth days of the disease.

a fall to normal occurred, the temperature usually remained down. In certain cases the impression was gathered that the serum, although it did not make the patient afebrile, kept the temperature at a lower level than is usual in pneumonia.[5] Except where a definite crisis occurred the pulse-rate and respirations were not usually influenced by the giving of serum. The temperature-reducing effects of the serum appear to be more marked in cases of Type I. than in those of Type II.

Leucocytosis.—In a number of cases observations in the leucocyte count were made daily. The usual reaction appeared to be a fall in the number of leucocytes, roughly in proportion to the change in temperature; an increase in white cells was only found in one patient

Blood pressure.—No striking change in systolic readings was observed.

There is no doubt in the minds of those who were watching the patients that the antiserum was of considerable benefit in certain cases even although the course of the illness was not shortened. Many of the patients appeared to have improved rapidly, becoming more comfortable and less distressed shortly after the serum had been given. (See Case 2.) Clinical histories of cases illustrating some of the more striking results are given below.

Illustrative Cases.

CASE 1.—Youth aged 18. Gave a history of "cold, cough," not feeling well," for seven days before admission. Continued at work till two days before admission. Pain in left side of chest, cough worse, vomiting, headache two days before admission; and spitting of blood one day before admission. Examination: Consolidation of the left lower lobe; well nourished; development good; acutely ill but no marked distress; temperature 102°, pulse 120, respiration 20–30. Blood culture—negative (twice). Sputum and lung puncture gave culture of pneumococcus I. Progress: Given one dose of serum on admission, at 8.45 P.M., on the third day of the disease. Conjunctival test negative. Following the injection the patient had a serum reaction like asthma, with urgent dyspnœa, cyanosis, and pain in the chest. One cubic centimetre of adrenalin eased the symptoms immediately. This injection was followed by a fall in temperature of 1° with consequent rise of 1·5° after six hours. Eighteen hours after admission there was sudden rise of temperature to 104·8° and he was given a second dose of serum. No anaphylactic phenomena followed this injection. After this the temperature came down steadily to normal, within 24 hours of admission and six hours after the second dose of serum. The fall in temperature was accompanied by all the typical signs of crisis. A very definite change was noted within a few hours of giving the second dose, not only in the temperature but also in the clinical condition of the patient. The ward sister, especially who has had considerable experience in nursing pneumonia patients, was impressed by the immediate improvement.

A similar asthmatic attack occurred in one other patient who had previously suffered much from bronchitis. He had never had asthma, and the preliminary eye test was negative.

CASE 2.—A man, aged 28, had had pain in left side of chest for one day before admission with slight cough, and shivering. He was admitted on the second day of illness. Examination: Consolidation of the left lower lobe. Patient extremely ill; collapsed; cyanosis marked. Temperature 101–103°; pulse 130–140; respiration 40–50. Blood culture negative (three times). Sputum, pneumococcus II. Progress: This patient was admitted within 24 hours of the onset of the illness, in a very critical condition. The prognosis was noted at the time as "almost hopeless." The white blood count was low, 8000. In all he received 12 doses of serum, injections being repeated every six or eight hours for five days. During that time "life hung in the balance." By the sixth day, however, definite signs of improvement were noticed, and by the seventh day it was obvious that the patient was going to live, all signs of crisis being present.

It is interesting to note that there was a gradual fall, both in pulse-rate and in respiration-rate, from the first dose of serum, although the patient did not seem to be making much headway. The ward sister, who also has had large experience in the nursing of pneumonia patients, attributed the recovery to serum. After the third and fourth doses of serum both doctors and nurses clearly noticed signs of improvement—less restlessness leading to natural sleep, less apathy, more coherent speech, sweating, and increased quantity of urine.

CASE 3.—A man, aged 39, had pain in the left side, with cough and insomnia for three to four days before admission. Examination: Consolidation of the left lower lobe. Blood culture negative. Sputum, pneumococcus I. White blood count 9000. Temperature 103°; pulse 100; respirations 40–50. Progress: This patient was chosen as a serum case because of the severity of his condition. Admitted on the fourth day, he was collapsed, cyanosed, and ashen-grey in colour—in short, extremely ill. He received one dose of serum two hours after admission, and within four hours his temperature had fallen to 99·5°. In another eight hours it had fallen to 97° F. A second dose was given 18 hours after admission, but by this time—that is, before the end of the fourth day—the crisis had occurred.

CASE 4.—Boy, aged 16, was feverish, with vomiting six days before admission; on the next day he had cough and pain and on the third day rusty sputum. Admitted on fifth day. Examination: Consolidation of right lower lobe. Well-nourished adolescent; no marked distress but severely ill. Temperature 103°; pulse 120; respirations 30. Blood culture negative; sputum, pneumococcus II. Progress: Admitted on the fifth day, one dose of serum was given at once. This was followed by a fall in temperature of 2°. A second dose of serum four hours afterwards was followed by relief, and by a fall of temperature to normal. A slight rise of temperature to 101° occurred eight hours afterwards, and a complete crisis took place 12 hours later. The recovery was uneventful.

CASE 5.—Man aged 30. Pain and cough for two days before admission; vomiting and rusty sputum for one day. The patient was moderately alcoholic. Examination: Consolidation of the left lower lobe; nutrition and development good; cyanosis; marked dyspnœa. Blood culture negative (twice), sputum, pneumococcus II. Progress: Reaching hospital on the third day of his illness, the patient was given a dose of serum, followed by further three doses at four-hourly intervals. Crisis occurred within 24 hours, with very marked improvement in general condition.

CASE 6.—Man aged 45. Indefinite "flu" 14 days before admission. Severe pain and vomiting three days before

admission, and headache; weakness two days. Examination: Consolidation of the right lower lobe; thin; nutrition poor; marked cyanosis; very marked distress; painful cough; rusty sputum; drowsiness marked. Temperature 104°; pulse 130; respirations 30–40. Blood culture negative (twice). Sputum, pneumococcus II. Progress: When admitted to hospital on the third day of the disease patient was in a collapsed condition. Three injections of serum were given within 24 hours followed by very marked improvement, and crisis occurred by the fifth day of the illness.

Summary.

The evidence submitted suggests that the administration of Felton's concentrated antiserum is of distinct benefit in the treatment of lobar pneumonia due to organisms of Types I. and II. Its action appears to be greater in the case of Type I. pneumonias. The records show that there were fewer deaths amongst the cases who received serum. Serum treatment seems to lessen the severity of the disease and undoubtedly shortens the febrile period in a proportion of cases. Many cases appeared to become less ill and more comfortable as a result of the injections. Anaphylactic phenomena were observed in two patients after the first dose of serum, although in both cases the preliminary eye test was negative. It is probable that the beneficial results would have been more striking had it been possible to commence treatment at an earlier stage in the disease, and if the supply of serum had permitted more frequent injections.

The writers wish to acknowledge their indebtedness to Dr. J. M. Alston and Dr. Donald Stewart and to Prof. Stanley Davidson for help in carrying out the investigations.

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THE INFECTIVE FACTOR IN THE CAUSATION OF ACUTE MYELOGENOUS LEUKÆMIA.

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THE following observations on three cases of acute myelogenous leukæmia lend support to the opinion of Dr. F. J. Poynton and Dr. A. A. Moncrieff [1] that the tissues, and the blood-forming organs in particular, are capable of reacting to infective processes in a great variety of ways and in varying degrees. The main features of these cases are an intensely severe sepsis in the mouth, associated with a marked and increasing secondary anæmia, and a white count in the early stages showing a leucopenia affecting the granular cells, followed by the appearance of a leukæmic blood picture of myelogenous type.

CASE 1, a male aged 19, was admitted to hospital on Nov. 12th, 1928, with a history of increasing weakness, giddiness, and headaches, following the lancing of an "abscess in the mouth" two months previously. A severe epistaxis necessitated his admission for blood transfusion. There was nothing of importance in his previous history; he was an average, healthy male.

He was markedly pale, with the right side of his face (around the mouth) puffy and swollen; he had difficulty in opening the mouth. There was a high temperature of swinging type (103°–100°), a pulse-rate of 120, and a respiration-rate of 30. There was a severe ulcerative condition of the mouth; the gums were swollen and œdematous, and oozed blood-stained muco-pus. The cervical glands were enlarged and tender. The heart was dilated, and an apical systolic murmur was present. The spleen and liver were not palpable. There were a few scattered petechiæ over the trunk.

[1] THE LANCET, 1930, ii., 787

Blood Counts.

(1) Red cells. (2) White cells. (3) Hæmoglobin. (4) Colour-index. (5) Polymorphonuclear cells. (6) Lymphocytes. (7) Large mononuclear cells. (8) Myelocytes. (9) Leucoblasts.

—	Nov. 12th.	Dec. 7th.	Dec. 17th.	Dec. 24th.	Dec. 31st.
(1)	738,600	2,172,000	1,824,000	2,016,000	896,000
(2)	800	27,200	66 400	24,000	10,600
(3)	15%	36%	28%	30%	18%
(4)	1·0	0·85	0·8	0·74	1·0
(5)	18%	18%	10·5%	17%	11%
(6)	82%	17%	3·5%	7%	7%
(7)	—	0·5%	—	—	—
(8)	—	35·5%	26·5%	18·5%	13%
(9)	—	29·0%	59·5%	57·5%	69%

Anisocytosis and poikilocytosis were present in all counts. Normoblasts were seen in the later counts.

Pathological Tests.—A culture from the teeth gave hæmolytic streptococci, but blood cultures were negative. A gastric test-meal showed complete achlorhydria. The van den Bergh reaction was within normal limits.

The patient had several blood transfusions, local dental and oral treatment, and an autogenous vaccine. The spleen became palpable about the beginning of December. His general condition improved considerably until towards the end of December. He died on Jan. 1st, 1929.

Necropsy.—The body was emaciated. There were petechial hæmorrhages scattered over the trunk and upper limbs. The lungs showed early diffuse broncho-pneumonia. The heart was dilated, flabby, and pale. The liver (5 lb. 2 oz.) was large, fatty, and a tawny-red colour. Free iron was present. The spleen (1 lb. 1 oz.) was large, soft, friable, and purple. The swollen pulp obscured the trabeculæ. The marrow of the sternum was a muddy grey colour; that of the tibia was reddish-grey.

Microscopical Appearances.—The spleen and the marrow from the long bones showed extensive myeloid hyperplasia. Many normoblasts were present in the marrow. Section of the liver showed severe fatty change around the portal radicles. Collections of immature myeloid cells were numerous in the portal spaces.

CASE 2, a female aged 28, was admitted to hospital on March 1st, 1929, with a four months' history of increasing lassitude and giddiness. Her teeth had been bad for some time, but her doctor told her that nothing could be done till she was stronger. A fortnight before admission she developed an acute feverish illness, which was associated with a sore-throat and swollen face.

Her appearance bore a striking resemblance to that of the previous case. The temperature was 103° and swinging in type, the pulse-rate 140, and the respiration-rate 30. Pallor was marked, and her face was so swollen around the mouth that the latter could only be opened with difficulty. There was noticeable fœtor of the breath. The gums were swollen and œdematous and almost completely obscured the teeth. The discharge from the gums was serous rather than purulent. Severe stomatitis was present. The cervical glands were enlarged and tender. The heart was not noticeably enlarged; the sounds were feeble and tic-tac in character. Bronchitis was present. The spleen was palpable one inch below the costal margin and was rather soft.

Blood Counts.

—	March 1st.	March 22nd.
Red cells	1,408,000	884,000
White cells	5,200	19,800
Hæmoglobin	32%	19%
Colour-index	1·1	1·12
Polymorphonuclear cells	54%	57%
Lymphocytes	43%	18·5%
Large mononuclear cells	3%	0·5%
Myelocytes	—	4%
Leucoblasts	—	20%

Anisocytosis and poikilocytosis were present in both counts. There were 140 normoblasts per c.mm. in the first count.

Pathological Findings.—A culture from the teeth yielded hæmolytic streptococci, but the blood culture was negative, the van den Bergh reaction normal.

In spite of rigorous local treatment and repeated mercurochrome injections intravenously, the patient went downhill

and died 21 days after admission. The spleen became impalpable towards the end.

Necropsy.—The body was emaciated. There were raw ulcers on the sides and roof of the mouth, with adherent sloughs. There was severe necrosis of the maxilla and the sides of the body of the mandible. There was a diffuse bronchitis, and bronchiolitis and the lungs were congested and œdematous. The heart was pale and flabby. The liver (3 lb. 11 oz.) was fatty and brownish-yellow in colour, interspersed with small discrete yellowish areas. The spleen (7 oz.) was rather soft, but the pulp was not noticeably swollen and the trabeculæ were easily made out. There were three dark purplish areas about the size of a halfpenny in the splenic substance. The marrow of the ribs was dry and yellow; that of the sternum and tibia was greyish-red.

Microscopical Appearances.—Section of the spleen showed little evidence of myeloid hyperplasia; the reticular structure was prominent. The liver showed collections of immature white cells of myeloid type. The marrow showed myeloid hyperplasia.

CASE 3, a female aged 59, was admitted on Jan. 30th, 1929, with severe epistaxis and nasal obstruction. Three months previously she had had similar bleeding from the nose, which had to be plugged. She had lost much weight recently. There were no important features in her past or family history.

She was noticeably pale and looked ill, with obvious nasal obstruction. She had a well-marked saddle-shaped nose (an appearance which she said had been present for 30 years). The temperature varied between 100·5° and 98°, and was of swinging character; the pulse-rate was 100, and the respiration-rate 22. Breathing was entirely through the mouth. Fœtor of the breath was noticeable. Her few remaining teeth were septic. There was an old perforation of the palate. The tongue was furred, and numerous ulcers covered its surface. The anterior pillar of the fauces, the tonsils, and the posterior pharyngeal wall were red and œdematous, with adherent greyish sloughs in places. The heart was dilated, and a systolic murmur of relative mitral incompetence was present. The spleen was palpable, one and a half inches below the costal margin, of firm consistency. The liver was felt one inch below the costal margin and was firm, with smooth surface and sharp edge. There were a few shotty glands in the groin. The tonsillar glands were enlarged. There were no abnormal signs in the nervous system save a bilateral eighth-nerve deafness. The urine had a specific gravity of 1020; a trace of albumin was present but no casts. Numerous petechiæ were seen scattered over the trunk and lower limbs. The Wassermann reaction was doubtful.

On Feb. 11th numerous red patches appeared on her arms and face; these varied in size from that of a pea to large areas, some three inches in diameter. They were raised above the skin surface with definite edge, and were of firmer consistency than normal skin. By Feb. 22nd the whole of the extensor surfaces of both arms and hands were covered by this infiltrative, hæmorrhagic, sharply marginated eruption. The upper parts of the face, the nose, the eyebrows, and the skin up to the roots of the hairy scalp in the frontal region showed a similar but less marginated rash. Both epitrochlear glands were palpable at this stage. During this time the throat condition had improved considerably under treatment. On March 1st the leukæmic infiltrations had begun to disappear, leaving a bruised appearance with surface desquamation. The spleen had not altered in size or consistency. The patient was obviously going downhill rapidly. Unfortunately her relatives took her out of hospital on March 22nd and she was lost sight of.

Blood Counts.

(1) Red cells. (2) Nucleated red cells. (3) White cells. (4) Hæmoglobin. (5) Colour-index. (6) Polymorphonuclear cells. (7) Lymphocytes. (8) Myelocytes. (9) Myeloblasts.

	Feb. 4th.	Feb. 23rd.	March 7th.	March 22nd.
(1)	1,732,000	1,500,000	1,336,000	1,152,000
(2)	200	400	670	870
(3)	6,400	42,600	44,600	15,800
(4)	36%	25%	20%	18%
(5)	1·06	1·17	0·77	0·8
(6)	26%	32%	52%	33%
(7)	5%	6·5%	3·5%	3·5%
(8)	55%	59%	40·5%	37·5%
(9)	14%	2·5%	4%	26%

DISCUSSION.

It is hard to believe that a clinical picture such as has just been described could be produced by the lowering of the patient's resistance by a process which affects the blood-forming organs and of the nature of which we are completely ignorant. We must, therefore, be drawn to the conclusion that infection is the essential cause. We are not concerned here with any specific factor; my intention is merely to put forward the theory that the blood-picture in many cases of acute myelogenous leukæmia is a special response of the hæmatopoietic system to a virulent infection.

The process seems to be evolved in this way. The organism gains an entrance to the body, commonly at the site of septic tonsils or teeth, and sets up a severe local inflammatory reaction. The patient is ill, with high swinging temperature, tachycardia, toxic appearance, and perhaps a purpuric rash. In certain cases at first the blood-forming tissues are paralysed, and the individual puts up no resistance. At this stage examination of the blood shows a profound secondary anæmia and marked leucopenia. Many cases are reported in which death has occurred at this point and in which the diagnosis has been "agranulocytic angina," "aleukæmic leukæmia," or "aplastic anæmia," diagnoses which depend on certain small characteristics of the blood picture. If the infection is resisted successfully, the blood-forming organs work hard to overcome it. A blood examination will show evidence of marked activity, with the presence of normoblasts, myelocytes, and myeloblasts. The liver, spleen, and marrow would show evidence of hyperplasia on the part of the reticulo-endothelial cells. There is a striking similarity, surely, between this picture and that of the response to the ordinary pyogenic infection, the only difference being in the actual degree of activity of the hæmatopoietic system. In certain cases of virulent infection with hæmolytic streptococci, for example, there is the same leucopenia in the initial stages, and death may occur. In a favourable case, however, a polymorphonuclear leucocytosis appears and the patient recovers.

It is obvious that there are two factors in the matter: one is the virulence of the organism, the other is the state of the individual's resistance. I would suggest that in cases of acute leukæmia the infection is a virulent one—in two cases hæmolytic streptococci were isolated—and that the individual has strong powers of resistance to begin with, but that it is in the great majority of cases overcome in the end. The fact that it commonly attacks healthy young adult males would support this. That every case of acute leukæmia is due to an infection is very difficult to imagine, far more so to prove, but I suggest that this causation is more frequent than is generally supposed. A recent review of the literature by Warren [2] goes far to support this. Experimental evidence has so far been conflicting. Several classical cases of the transference of the disease have been reported, but conclusive evidence is still wanting.

One conclusion certainly emerges from a study of these cases: that though our knowledge is still far from complete, there is great need for a restatement of our ideas on blood diseases in general with special reference to those directly due to infection.

I am indebted to Dr. A. C. D. Firth and Dr. C. F. T. East for permission to publish their cases.

[2] Warren, S. L.: Amer. Jour. Med. Sci., 1929, clxxviii., 490.

MOTOR LICENCE OF EPILEPTIC DRIVER.—Under the new Road Traffic Act, the Manchester Watch Committee have decided to revoke the driving licence of a private motorist reported to be an epileptic. It was stated that the driver was involved in an accident due to an attack of epilepsy.

CLINICAL AND LABORATORY NOTES

ON APPROACHING THE APPENDIX THROUGH A TRANSVERSE INCISION.

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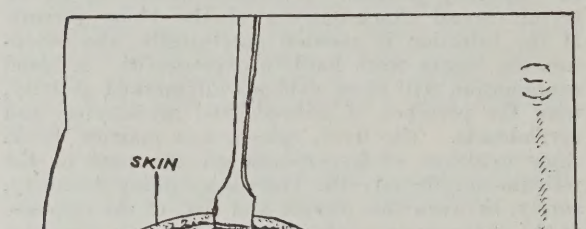
For some years I have employed in certain cases of appendicitis an operative approach which may be worthy of publication. Its originality cannot be vouched for, but it is not described in the standard text-books and I have not encountered it in the somewhat limited research which I have made into the vast literature on the subject.

The approach is equally suitable for acute and chronic cases, and can be employed for the drainage

Fig. 1.



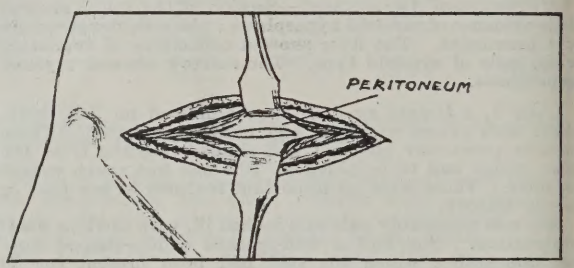
of an iliac abscess as well as for the removal of the appendix. It has, however, one important limitation—i.e., the incision is horizontal and cannot be prolonged to deal with an epigastric or a low pelvic lesion. When the diagnosis of an iliac appendix is reasonably certain, and a general exploration of the abdomen is either unnecessary or undesirable (very frequently the case in these days of improved diagnosis and conservative surgery), this method has very real advantages. It provides an excellent approach, permits of a rapid and easy resection of the appendix, and has proved the simplest and safest route for a retroperitoneal approach and the drainage of an iliac appendix abscess. Other advantages will be pointed out later.

TECHNIQUE.

For appendicitis without abscess.—The incision is absolutely horizontal, and extends from the anterior superior iliac spine inwards for 1½ to 3 inches, according to the age and build of the patient. The external oblique aponeurosis is exposed and a few of its muscle-fibres will be seen at the outer end of the wound. One or two bleeding-points may require ligature. The aponeurosis is split in the line of the skin incision and the muscular fibres of the internal oblique are exposed. These fibres are here running almost transversely and a line of separation is made with a blunt instrument. The transversalis is then split in a similar manner and the transversalis fascia divided in the same direction. One nerve only is likely to be encountered; this is the iliohypogastric, which pierces the internal oblique an inch or so in front of the anterior superior spine and can be readily displaced.

The peritoneum is now exposed, and at the outer angle of the wound this can be seen coming off the

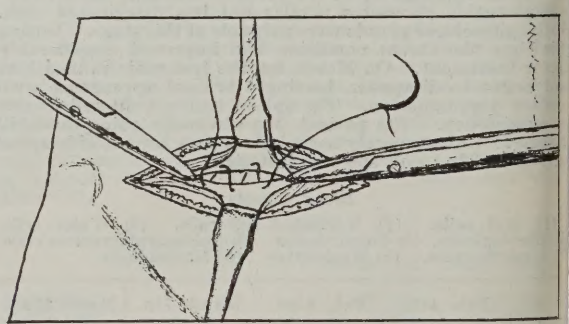
Fig. 2.



iliac fossa to the anterior abdominal wall in the form of a lateral reflection, which stands out as a definite fold. It is picked up and incised horizontally, a 1½-inch opening usually being sufficient. The cæcum will be found immediately under the wound and can be delivered very easily, except when anchored by adhesions. An adherent subcæcal, retrocæcal, retrocolic, or ileal appendix can be freed and brought out with greater ease than through the more medial oblique or vertical incisions in common use. These four positions between them account for no less than 68 per cent. of 5000 cases investigated by Wakeley and Gladstone.[1] Real difficulty has only been encountered in appendices bound down in the pelvis, and even here the procedure can be greatly facilitated by prolonging the incision inwards for half an inch or an inch.

After the appendix has been amputated and the stump invaginated, the edges of the peritoneum can

Fig. 3.



be picked up with great ease and brought together with a suture. I frequently employ a single running suture puckering the peritoneum, one knot being sufficient. The muscle-fibres are approximated with one mattress suture, the aponeurosis sewn up, and the skin wound closed, preferably with a subcuticular suture.

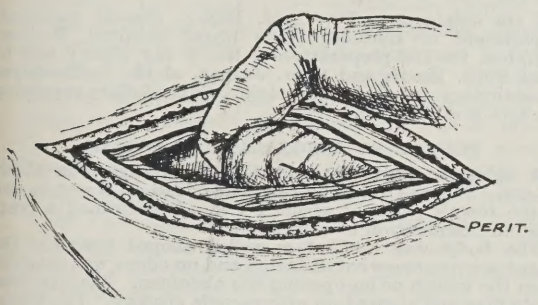
For iliac appendix abscess.—In the presence of a localised abscess, shut off from the general peritonea

[1] The Lancet, 1928, i., 178.

cavity, modern teaching favours conservative methods. The immediate indication is to open and drain the abscess, and only to remove the appendix when this can be done without danger of infecting the peritoneum. Appendicectomy can be performed in other cases at a later date, with incomparably greater safety. A pelvic abscess should be opened through the rectum, but in the case of an iliac abscess the ordinary transperitoneal approach must be condemned, as it entails a definite risk of peritoneal infection.

My approach provides a safe route for the evacuation and drainage of an iliac abscess, as the entire procedure can be carried out extraperitoneally. The incision need only extend for 1½ to 2 inches inwards from the anterior superior spine. After the aponeurosis has been divided and the muscles

FIG. 4.



Perit. = peritoneum peeled off iliac fossa.

split, the reflection of peritoneum coming off the iliac fossa is sought and peeled inwards off the iliacus until the abscess can be felt from behind. It is then opened with the finger or with sinus forceps and cleaned out with swabs on holders. A drainage-tube is inserted into the abscess cavity and brought out through the outer end of the wound. With the patient lying a little over on the right side very excellent drainage is provided. In this way all danger of soiling the peritoneum is avoided, and in every case in which this technique was followed the result was satisfactory, the abscess clearing up and the wound usually healing in less than half the time required for the healing of an abscess opened transperitoneally.

ADVANTAGES.

(1) This method provides the easiest possible approach to the cæcum and therefore to the appendix, when this is not bound down in the pelvis. With the incisions in common use several minutes may be spent in pulling out coils of ileum before finding the cecum. (2) It causes less damage to the abdominal wall, as no nerves get in the way, and the muscles are split in the direction of their fibres. As a result, the danger of ventral hernia is greatly reduced. (3) It has this great advantage over the grid-iron incision: all the layers of the abdominal wall are split in the same direction and, therefore, a greatly improved exposure is obtained. (4) The horizontal incision lies in a natural fold; the scar cannot stretch and becomes practically invisible. (5) With little experience, considerable time is gained over other methods; in uncomplicated cases the operation could be completed in 7 to 10 minutes. (6) Its advantages in the treatment of an iliac abscess are very real and perhaps constitute its greatest recommendation.

To sum up, this approach is confidently recommended as worthy of trial in cases in which the diagnosis of an iliac appendix is clinically certain, and particularly when an iliac abscess is suspected. I have employed it in over 200 cases, and in only five of these was it necessary to make a fresh incision to deal with some other abdominal or pelvic lesion.

TWO UNUSUAL CASES OF SUICIDE.

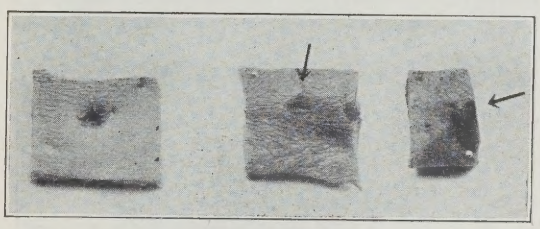
BY W. STEWART, M.B. GLASG.,
ASSISTANT PATHOLOGIST, THE ROYAL HOSPITAL, WOLVERHAMPTON.

TWO GUNSHOT WOUNDS IN THE HEAD.

Two brothers were in partnership as dairymen. On the morning of the occurrence both brothers got out of bed at the same time, about 6 A.M. One went out to bring in some cattle, while the other (the deceased) went about the household duties he usually performed. The one who had gone out returned within half an hour to find his brother lying unconscious in the back kitchen. He noticed some hæmorrhage from the forehead. He summoned assistance, and while attending to his brother found a rifle underneath his body. The doctor who was called in washed and bound up the wounds and sent him into hospital, where he died some three hours later without regaining consciousness. The doctor afterwards stated that there was no tattooing from gunpowder around either of the wounds before he had dressed them.

The *post-mortem examination* was performed on the following day. There were two punctured wounds in the

FIGS. 1 2 3



Entry wounds of bullets: 1. Fired into dead skin at distance of three feet. 2. Fired into dead skin at distance of one-tenth inch. 3. Skin from Case 1.

forehead, both measuring in diameter three-sixteenths of an inch. One was situated in the mid-line, two inches above the bridge of the nose, and the other in the upper margin of the right eyebrow in a line with the outer angle of the right eye. There was no burning or scorching around either of the wounds, nor was there any singeing of the eyebrow. The wound in the middle of the forehead penetrated the whole depth of the tissues, and at its base, lying against the bone, was found a flattened bullet. There was no injury to the bone at this point. The other wound, over the right eye, penetrated the skull. The bullet had made its way diagonally across the brain and in a slightly downward direction. It was found in the brain substance at the tip of the left occipital lobe. There was no injury to the base of the skull.

There was no organic disease of the brain. The examination of the other internal organs showed only slight tuberculous infection of the apex of the right lung.

On first thoughts this would seem to be a case of homicide. Would it be possible for deceased to have fired both shots? There was no known motive for suicide; the deceased was not embarrassed in any way.

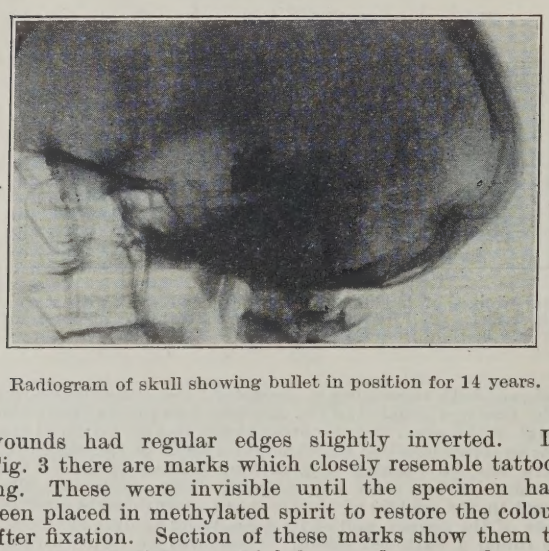
The rifle was a Marlin repeating rifle, calibre 0·22. It had a tube beneath the barrel capable of holding, I think, 15 cartridges. After firing a lever is pushed

down and is then brought back to its original position by closing the hand. This procedure automatically ejects the spent cartridge, cocks the rifle, and reloads. It could also be used as a single-shot rifle, but in any case the lever has to be used. The bullets were "long but short," and the powder smokeless. They were of American type and of old manufacture. If the deceased did fire both shots it was only possible for him to do so at very short range. There were no contrivances for pulling the trigger, and he was wearing his boots.

The classical signs of a near gunshot wound made by similar bullets may be taken to be: (1) burning and singeing round and near the wound, accompanied by some bruising; (2) tattooing due to deposit of unexpended gunpowder. All these were absent in this case, except some slight bruising in the lower border of each wound.

With the assistance of the police some experiments were carried out with the rifle in question, using similar cartridges. With a piece of cardboard there was distinct evidence of tattooing up to a distance of 18 inches. Burning and scorching were difficult to assess owing to the composition of the target. The experiments were repeated, using material from a post-mortem examination, the results being shown in the accompanying photograph. Fig. 1 shows a shot fired at a distance of 3 feet; it shows distinctly irregularity of the edges. Fig. 2 is of a shot fired at as short a distance as was compatible with safety during the experiment, approximately a tenth of an inch. It shows absence of scorching and singeing. Fig. 3 is that of the deceased. Both of the deceased's

FIG. 4.



Radiogram of skull showing bullet in position for 14 years.

wounds had regular edges slightly inverted. In Fig. 3 there are marks which closely resemble tattooing. These were invisible until the specimen had been placed in methylated spirit to restore the colour after fixation. Section of these marks show them to be subepithelial petechial hæmorrhages; there is no destruction of the squamous epithelium. The hæmorrhages were confined to the subcutaneous areolar tissues.

These experiments showed quite clearly that the rifle had been fired at very close range, although practically all the signs of close-range firing were absent. It is probable that of the two shots the one in the middle of the forehead was the first to be fired. One would have thought that the deceased, having received the first shot, would have been too much incapacitated from shock to fire a second shot within such a short interval. That shock is not commonly present in gunshot wounds was shown by the late Sir Frederick Treves from experience gained during the South African War.[1] Numerous cases could be quoted from the late war—for example, the X ray photograph (Fig. 4) showing a bullet lodged in the right temporo-sphenoidal lobe. The recipient received it from Turkish rifle fire near Kut on May 1st, 1916. He states that he had no idea he had been wounded, his only symptom being a slight trickle of blood down his right cheek, and he walked, without assistance, a distance of one and a half miles to a dressing station. The bullet penetrated over the right eyelid in much the same position as in that of the deceased. At present his only symptom is very slight loss of memory. All honour to the surgeon who left the bullet alone!

Although there was no tattooing around the wounds of the deceased, microscopic section showed abundant deposit of unspent gunpowder in the deeper layers of the tissues.

The jury returned a verdict of "Suicide during temporary insanity."

I am indebted to Dr. C. M. Rigby, clinical assistant, Department of Radiology, the Royal Hospital, Wolverhampton, for the preparation of the X ray plate; and to Chief Supt. Heath and Supt. Jeffery, of the Staffordshire Constabulary, for their coöperation, Supt. Jeffery supplying the details of the rifle.

SUICIDE BY BINOXALATE OF POTASH.

A spinster, aged 37, arrived in Wolverhampton about 10 A.M. She was found by the police dead on a seat in one of the town's parks at about 1 P.M. I performed a post-mortem examination two days later.

The body was that of a well-developed female; the features were somewhat distorted and no odour was detected from the mouth or on opening the abdomen. The liver was fairly firm and showed no macroscopic changes. The spleen was soft and friable. There were no signs of corrosion of the mouth; the œsophagus was grey in colour, and there was no destruction of the mucosa. The stomach contained four ounces of a dark-brownish blood-stained material. The internal wall was wrinkled and whitish-grey, and the congested vessels were sharply demarcated from the surrounding tissues as blackish arborescent streaks. In one place there was evidence of a healed ulcer. The small intestine showed similar congestion down to a few inches above the ileo-cæcal valve, the appearances of the vessels being somewhat similar to those of the stomach, although not so pronounced. The mesenteric glands were tuberculous, and some were calcified. Both Fallopian tubes showed tuberculous invasion, and the tip of the appendix was adherent to the right ovary, which was cystic. The uterus showed some endometritis. The heart showed no abnormality. The lungs were congested, and for a radius of about two inches around the hilum the blood was a bright red. The pancreas and the kidneys showed venous engorgement.

Microscopic examination of the latter showed that the glomeruli had almost all escaped damage; in only a few was there a slight hæmorrhage, with no degenerative changes. There was extreme degeneration in the tubules, the collecting tubules being the least affected; there was also considerable interstitial hæmorrhage. The brain was somewhat congested, and showed towards the base a few petechial hæmorrhages.

About fifty yards from the body were found a labelless four-ounce bottle and a small tumbler containing a white crystalline substance, which afterwards proved to be binoxalate of potash. I was able to find grs. 31·34 of this substance in the stomach contents alone. The deceased had previously vomited; the vomit I did not obtain. A solution made from the teeth, which were false, also gave a typical reaction. This was interesting, since one of the reactions is a white precipitate with silver nitrate and the normal contents of the stomach also give this white precipitate. On allowing the filtered gastric contents to crystallise out, only a few rhombic prisms were obtained, the majority assuming the plumose shape.

I am indebted to Dr. S. C. Dyke, consulting pathologist to the Royal Hospital, for permission to record these cases.

[1] Vide Glaister's Medical Jurisprudence, 4th ed., p. 296.

MEDICAL SOCIETIES

CHELSEA CLINICAL SOCIETY.

Dr. F. J. McCANN took the chair at a dinner meeting of this Society held at the Rembrandt Rooms on Dec. 16th, when a discussion on

Fibrositis

was opened by Sir THOMAS HORDER.

The treatment of all fibrositic conditions, he said, from the simple attack of lumbago to the many involved and obscure forms now recognised, depended largely on a correct appreciation of the numerous ætiological factors involved. The chief of these were: (1) microbic infection, which had hardly been mentioned 20 years ago and would perhaps be almost forgotten 20 years hence, and which to-day was somewhat overrated; (2) metabolic defects, such as the oxalic and possibly the phosphatic diathesis; (3) defective nutrition, including that seen in patients who had been treated by means of ill-conceived dietetic methods; this included the plethoric condition, of which the "city alderman" was an example. The factors outside the physician's control were also important: (4) age, (5) sex, (6) heredity, (7) the menopause, (8) climate, (9) occupation, and (10) trauma.

The view that microbic infection was the dominant factor was so strong to-day that in most text-books the term "rheumatoid arthritis" had been abandoned. Nevertheless, it might not be dominant in any given patient, and in each case it was advisable to ascertain to what extent the microbic infection as a whole contributed to the condition in relation to other factors rather than to perform many different bacteriological tests. A classification according to the importance of the infective factor would be headed by such diseases as gonococcal and meningococcal arthritis, followed by syphilitic diseases of joints, tendon-sheaths and bursæ; dysenteric fibrositis; and, finally, the arthropathies: Charcot's joints and syringomyelic joints; pure traumata leading to small hæmorrhages, and ruptures of synovial fringes leading to synovitis and arthritis.

The difficulty lay in the intermediate group, which included the factor of gout. The gouty patient demonstrated a tendency to metabolic—or purin—dysfunction which was in many instances activated by microbic subinfection. The treatment of this often produced relief, but a gouty patient always had a peculiar clinical picture different from that of other expressions of focal sepsis, and the removal of the infection would not dispose of the metabolic dysfunction. In the rheumatoid state there was usually an infective factor, but it was only one of many; others were lowered nerve tone, which lowered resistance to subinfection, and the nutritional factor.

Since dental sepsis was often closely related to fibrositis, a careful clinical and radiological search should be made for devitalised teeth, gum recession, deep pockets; "throwing-out" of the alveolar margin, indicating a local chronic fibrositic process; and "pyorrhœa sicca," a chronic dry fibrositic process probably induced by apical infection. Dead teeth, obviously infected teeth, and those with apical abscesses were sacrificed in chronic or recurring fibrositis, but where the periodontal membrane was thickened and inflamed with a certain amount of recession of the gum but the teeth were alive and mechanically useful, the patient should be expected to share some of the responsibility of removing them and should be told frankly that the result was doubtful. The septic tonsil was not so likely to be the big hyperplastic one as the small, blue, hard tonsil which, like the gum, gave an impression of being fibrositic—the impression that it had been subjected to a chronic, non-suppurative (the speaker stressed this qualification) inflammatory process. Sepsis was by no means synonymous with suppuration. The sinuses should be examined in the routine manner. The prostate should be suspected if there were any history, not necessarily of gonorrhœa, but one substantiated by prostatic threads or mucus in sedimented urine, whether organisms were present or not. Massage often gave good results. The urine in fibrositic patients rarely showed organisms if collected under sterile conditions. Sir Thomas did not advise speculative removal of the appendix or gall-bladder, but if there were clinical reasons, especially supported by radiological reasons, he gave the benefit of the doubt a little more readily to the fibrositic patient than he would to another.

Fibrositis might in some cases be due to a subinfection of tracts of mucosa rather than of its "belly-outs" or culs-de-sac. It might be profitable to examine the nasopharynx "by the square inch" rather than merely its "dug-outs." Intelligent appreciation of the importance of subinfection of the intestines had been hampered by the introduction of the horrible term "alimentary toxæmia." This might mean any one of a number of conditions, from the absorption of ptomaines or putrefaction products to protein sensitiveness. Microbic infection of the intestinal mucosa was, of course, not a toxæmia in the sense of intoxication; the French recognised the distinction very clearly.

In treatment, apart from acute microbic infections, there was very little indication for the use of bactericidal serum. Vaccines might, however—if the major premise were allowed that the condition was chiefly due to infection—be of value. The pyogenic cocci lent themselves readily to the production of antigens. According to Dr. Warren Crowe, the practitioner was inclined to abandon the treatment too early and to lose heart because the patient became sensitive; this was, according to Dr. Crowe, rather a cause for encouragement. Sir Thomas thought that vaccines were not given as good a trial as they should be in chronic intractible fibrositis. A boom in physical methods of treatment was overdue. It should not be necessary to send patients to the osteopath. Hundreds of milder cases were cured outside the control of the professions because practitioners did not take enough pains, and had not quite the right liaison with trained assistants. For muscles, massage was the most important form of treatment; for joints, passive leading to active movements under the direct supervision of the practitioner. In neuritis or sciatica the physiotherapeutic part of the treatment was the most important. Speaking of drugs, Sir Thomas said that the present age was one in which specificity in treatment and the linking-up of treatment with diagnosis were not popular. Personally, he preferred not to give drugs whose action he did not understand.

DISCUSSION.

Dr. C. E. SUNDELL said that, in the vast majority of cases, the bacterial factor was of no importance.

Why should fibrous tissue suffer from "-itis" and not other tissue? The striking difference was its relative avascularity, and the condition might be based in some circulatory anomaly. The first stage was capillary stasis of the affected parts, and it was then that treatment should be started, before the nodule developed. Heredity was extremely important; fibrositic patients manifested the adult stage of a life-history of which the juvenile stage was growing-pains. The temperature of the patient was always subnormal except under a stimulant—an indication of sluggish metabolism. Anomalies of skin secretion were very frequent; the skin was dry, and profuse sweating could be induced by certain stimuli, resulting sometimes in cure. Subject to the removal of septic foci, treatment was in the hands of the physiotherapeutist, who could stimulate the circulation and the action of the skin. Endocrine trouble might be a factor, and small doses of thyroid were often effective.

Dr. K. E. ECKENSTEIN said that in fibrositis the practitioner was dealing with a patient complaining of vague pains which were nevertheless very definite and difficult to cure. The only thing that he could do was to treat the patient to the best of his ability and hope for a good result.

Mr. P. JENNER VERRALL said that certain types of fibrositis—particularly tennis-elbow and painful heel—were almost always due to focal sepsis, usually an apical abscess. The question was not as vague as some speakers had suggested. The condition was governed by the good old orthopædic principle of circulating toxins, chemical or microbic, and a local trauma, which need not necessarily be an injury but was often a slight chronic irritation. The cure of tennis-elbow by the incision of Osgood's bursa was due to the opening-up of the deeper lymphatics. Patients with lumbago were often lordotic; their posture put a chronic strain on the erector spinæ which fatigued it so that all the strain was thrown on to the fibrous tissue. This was an example of chronic continued trauma, and any kind of circulating toxin was liable to affect that strictly non-vascular tissue, the attacks depending on whether the toxins were in the ascendant or not.

In physiotherapy, the acute case required not osteopathy but sedative massage. In chronic fibrositis a time came when the condition became an infiltration of the fibrous tissue of the fasciæ and possibly of the muscles; manipulation, preferably under an anæsthetic, was then the treatment of election.

Dr. TEMPLE GREY suggested that all children had growing-pains. The soil must be more important than the infection, or people in the lower classes, who often suffered from extreme forms of local sepsis, would suffer more from fibrositis. It might be useful to revise the old doctrine of individual temperament.

Dr. E. P. FURBER suspected that many of the modern remedies acted chiefly by psychotherapeutic means.

The CHAIRMAN said he feared the profession had all gone septic mad. Pyorrhœa was a disease of the gums, not of the teeth, and extraction should not be necessary in its treatment; he advocated salt solution. He remarked on the frequency of fibrositis in the medical profession, especially in surgeons, and inquired whether long hours in the humid atmosphere of the theatre were not to blame. He sought an explanation in the term "tissue indigestion"—congestion of the blood-vessels and lymphatics. This would account for the universality of the disease and its appearance even in animals and birds. He had immensely improved his own condition, of which the basis was undoubtedly hereditary, by rational dieting.

Sir THOMAS HORDER, in reply, said that capillary stasis was possibly one of the expressions of the inflammatory state, and that subnormal temperature and lowered basal metabolic rate showed a chronic infection to which there was a low grade of resistance. There was a trend of opinion in favour of raising resistance rather than combating infection directly. He had, he said, obtained good results from atophan provided that it was carefully given, three days at a time, with rest periods of three days, in conjunction with alkali treatment. He had never met a disaster from its proper use. It was a powerful detoxicator of purin derivatives in the liver.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF PATHOLOGY.

AT a meeting of this Section on Nov. 28th Dr. J. LAIT, the President, took the chair, and a paper on the prevalence of

Diphtheria Carriers among Dublin School-children

was read by Dr. R. A. Q. O'MEARA. He had, he said, taken nose and throat swabs from 1000 school-children between the ages of 3 and 13, and found morphological diphtheria bacilli in 50 (5 per cent.). In 41 (82 per cent.) of the carriers the organisms were isolated and subjected to fermentation and virulence tests. It was found that 2·3 per cent. of the 1000 children were carriers of virulent diphtheria bacilli, and he estimated that there were some 3000 carriers of diphtheria bacilli in the Dublin schools, of whom 1400 carried virulent organisms. The carrier-rate was higher for girls than for boys. The importance of nasal swabs in searching for carriers was shown by the fact that 25 of the positives were nasal carriers only; 18 were throat carriers only, while 7 were carriers in both nose and throat. The organisms were virulent in 44 per cent. of the nasal carriers, in 43 per cent. of the throat carriers, and in 68 per cent. of the nose and throat carriers.

The PRESIDENT asked what the clinician should do when he encountered these children, and how they were to be distinguished from early cases of diphtheria.

Dr. W. R. O'FARRELL referred to the intermittency of the carrier state, and its bearing on the results obtained in any locality.

Dr. M. J. RUSSELL, speaking as medical officer of health for Dublin, said that Dr. O'Meara's results showed a serious state of affairs, especially as the schools of the city were overcrowded. A clinic had been established for prophylactic inoculation of children before school age with toxoid-antitoxin mixture, and it was hoped that the incidence and mortality of the disease, which had shown a distinct upward tendency in recent years, would be lessened. He appealed to clinicians to assist in reducing the figures by prompt isolation of cases and by deferring the discharge of convalescents until they were shown to be free from diphtheria bacilli.

Dr. A. R. PARSONS asked what was the significant difference between virulent and non-virulent diphtheria bacilli, if the presence of the non-virulent bacillus was of any consequence, and if the non-virulent could change into the virulent type.

Dr. W. F. HOOPER suggested that the inculcation of cleanly habits into the poorer children in Dublin schools would help in reducing the number of carriers.

Dr. O'MEARA, in reply, said that the Schick test was a method—not however to be recommended—of distinguishing the carrier from the early case. The distinction could best be made on clinical grounds, and in cases of doubt serum should be given. The difference between virulent and non-virulent diphtheria bacilli was that the former were toxin-producing, whereas the latter were not. The non-virulent type was harmless and did not give rise to the virulent type. There was no necessity for giving antitoxin when only non-virulent organisms were present.

The PRESIDENT read notes on a case of cerebro-spinal fever.

KING EDWARD'S HOSPITAL FUND FOR LONDON.

A MEETING of the President and General Council of King Edward's Hospital Fund for London, for the purpose of awarding grants to hospitals and convalescent homes, for the present year, was held at the House of Lords on Dec. 12th.

The Prince of Wales, who was in the chair, read the following message from the King:—

"Buckingham Palace.

"The King has learned with much satisfaction that the income of the Fund has enabled the distribution to be increased from £250,000 to £266,000, and that £116,000 has also been received on capital account. These gratifying facts themselves testify to the confidence which the Fund has established in the minds of the public, and must be a great encouragement to all its workers and well-wishers.

"His Majesty deeply regrets the death of Sir Otto Beit, to whose munificence the King's Fund is indebted for so large a proportion of the radium which it holds for the use of hospitals in London."

Increase in the Distribution.

Continuing, His Royal Highness said it was very fortunate that it was possible to increase the distribution this year from £250,000 to £266,000. It had remained at the quarter million for two years, and a good step forward had been made towards the £300,000 mark. This increase was made possible by three satisfactory features in the receipts. First, a donation of £10,000 from the anonymous friend who had during the past few years given seven sums, amounting in all to £54,000; secondly, there had been considerable additions to the capital fund, notably £90,000 under the will of the late Lord Revelstoke, for many years the treasurer, and the income from this capital was the solid foundation on which the annual distribution was based; thirdly, the legacies not earmarked for capital had now, for the third year in succession, amounted to more than £60,000, and the whole £60,000 had been received before November, when the estimates were made up. The combined result was that the distribution had been increased by £16,000, and the Fund was able to pay the special grants towards the pensions scheme for nurses and hospital officers, which come to about £16,000, without running any undue risk of not maintaining this progress in the future. The total amount distributed was thus £282,468.

PROGRESS OF THE VOLUNTARY HOSPITALS.

Voluntary hospital managers, like most other people the world over, were finding 1930 a difficult year. But, said his Highness, before we begin to talk about remedies, let us try to get the diagnosis right. There had been no evidence whatever of any gradual drying up of voluntary contributions during recent years. From the figures in the King's Fund Statistical Review down to the end of 1929 it would be seen that the number of beds was larger every year; expenditure, therefore, increased every year, but income more than kept pace; the aggregate surplus on the year's working increased from £17,000 in 1928 to £50,000 in 1929; surpluses were £3000 more, deficits £30,000 less; the total from voluntary gifts for all purposes in 1929 was £2,800,000. This referred to the hospitals in London alone. The figures for hospitals outside London were better still. For years this had been the normal general position of the voluntary hospitals, maintained, like all good things, only by constant effort, but nevertheless successfully maintained. The difficulties at the present time were exceptional. Taking all the hospitals together, during recent years, there had been a steady increase in income year after year.

IMPORTANCE OF THE VOLUNTARY SYSTEM.

It was important that voluntary contributions should be maintained. Efficiency could be secured in many different ways; but there were certain special characteristics with which the voluntary system permeated the whole hospital service of this country; and these characteristics had their origin in the close touch between the workers in the hospital, voluntary and paid, and that particular form of sympathy and public spirit which found expression in voluntary giving.

GROWTH OF THE HOSPITAL SAVING ASSOCIATION.

Voluntary contributions by patients themselves had been growing at a great rate, and he particularly referred to the contributions organised by the Hospital Saving Association, under the chairmanship of Sir Alan Anderson, by means of weekly workshop collections. The membership of the H.S.A. had grown from 62,000 in 1924 to 800,000 in 1930, and the total receipts from £22,000 to £438,000, all collected in threepences. As patron of the association, and as president of the King's Fund, which helped to found it, this information was known to him, but the other night he had seen a hall packed with 2000 men and women, all obviously in a state of enthusiasm over their job of putting up over 3*d.* a week out of their wages, and giving up their spare time to get others to do the same, in order to be able to contribute their fair share of the cost of hospital treatment for themselves and their families, and to help their mates to pay theirs, and thus to help the hospitals to treat those who could not afford to pay. If those wage-earners could thus continue, in ever-increasing numbers, voluntarily to contribute their share, in spite of the bad times, surely it was up to all the other members of the community also to contribute their share, and so make sure of keeping the voluntary spirit of mutual helpfulness as a permanent feature of our hospital service, under the new arrangements for coöperation between the county authorities and those responsible for the voluntary hospitals.

Distribution of Radium: Further Gift from Sir Otto Beit.

Besides the ordinary distribution they had to consider the allocation of the further 6 g. of radium which the Fund was able to buy because of the King's Fund share of the Thank-offering radium money, and the £10,000 from Mr. Roger Parr. This is in addition to the 4 g. bought in 1928 with the gift of the late Sir Otto Beit, whose death was such a grievous loss to all who knew him, and knew and valued the great work which he achieved by devoting so much of his

wealth, and also of his time and thought, to public objects, particularly the advancement of knowledge and the cure of disease. When the Distribution Committee prepared their report, there was a deficit on this additional 6 g. in the neighbourhood of £8000. This deficit no longer existed; for it was one of the last acts of Sir Otto Beit to authorise the honorary secretaries to say that he would himself make up whatever was required to pay for the balance. The King's Fund now held 10 g., and the method of concentrating the ownership of radium in the hands of a central body, which placed it out on loan, was well recognised to be one of the best ways of securing its most efficient use both for treatment and for the spread of knowledge. It was of the utmost importance that the new experience should be pooled, and should be acted on, as quickly as possible. Referring to the Thank-offering Fund, the Prince of Wales said it was interesting to know that the generosity of "Audax" in giving £105,000 to start that Fund was still bearing fruit. Recently an anonymous working man, in consequence of Mr. Audax's broadcasts, had made up his mind to send a guinea a year to the King's Fund for ten years. After sending 18 months' instalments, he had now sent the whole of the balance. Another interesting donation was the grant of £500 from the Naval Benevolent Trust, on behalf of the petty officers, non-commissioned officers, and men of His Majesty's Navy, in appreciation of the work done by the London hospitals for naval men and their dependants.

After referring to the interest of the Distribution Committee in the question of the time at which hospital patients are awakened in the morning, and to the increase in the grant to convalescent homes from £2000 to £3000, and to the Fund's indebtedness to Lord Luke and Lord Macmillan for services in connexion with the Road Traffic Act which ensured some payment to hospitals for the treatment of road accidents, his Royal Highness mentioned the loss to the Fund by the deaths of Sir Francis Champneys, Mr. Pett Ridge, Mr. T. P. Legg, and Mr. W. H. Marshall. He then welcomed back on the Propaganda Committee Mr. E. W. Morris, and concluded by moving a resolution of deep regret at the death of Sir Otto Beit, and the resolution, which contained a message of sympathy in her bereavement to Lady Beit, was passed in silence, the members of the Council rising in their places.

Treasurer's Statement.

Mr. E. R. Peacock (the treasurer) said that the anonymous donation of £10,000 was a most important addition to the income of 1930. The maintenance of the distribution had for many years depended on receiving one or more large donations, and every year one or two had been received, except in 1929, when there were, of course, large receipts through the Thank-offering Fund. The additions to the capital fund during 1930 amounted to £116,000. This included the legacy of £100,000 from the late Lord Revelstoke, which was reduced to £90,000 by taxation. This he regarded as one of the worst and least defensible forms of taxation. There were two other legacies of about £5000 each, one from the estate of the late Sir Frederick Eckstein and one from that of Mrs. Hames—an instalment of a much larger amount. There was also £15,000 from "Audax." It was indeed satisfactory that legacies available for general purposes should, for the third year in succession, have come to more than £60,000. Taking all these receipts into account, the Fund had been able not only to increase the ordinary distribution by £16,000, but also to meet the cost of the special grants in aid of expenditure on the Pensions Scheme, which came to just over £16,000, and to carry nearly £16,000 to reserve, where it would be available for use in case of future emergency. As the hospitals had for some time past added every year approximately 500 to the number of their beds, it was clear that to keep pace with the needs of the hospitals there must be a progressive and substantial increase in the amount of the annual distribution.

Lord Marshall, in making the annual statement on behalf of the League of Mercy, said that this year the League of Mercy proposed to allocate to the King's Fund the sum of £17,000 from its collections.

Grants to Hospitals and Convalescent Homes.

Sir Cooper Perry (the chairman of the Distribution Committee) presented the report of the Committee on the Distribution to Hospitals (including Recovery and Convalescent Branches), and moved the recommendation that the grants be approved.

The report stated that the amount placed at their disposal for allocation amongst hospitals and their recovery and convalescent branches was £263,000, as against £248,000 last year. The number of hospitals applying for grants was 141, as against 143 in 1929. The Ross Institute and Hospital for Tropical Diseases had withdrawn its application, and the Middlesex Hospital now applied in respect of the main hospital and the cancer wing as a single institution. As the General Council had increased the total to £263,000, the Committee had been provided with an additional £9000, corresponding to the amount added to the maintenance grants last year, and an additional £6000 to meet increased needs. The special grants towards expenditure on the Federated Superannuation Scheme for Nurses and Hospital Officers came to £16,468, as against £13,734 in 1929. By October, 1930, 97 hospitals had joined the scheme, as against 94 a year earlier; and more nurses and officers had joined.

The total of the present distribution, taking into account ordinary maintenance grants, grants towards capital expenditure, and special pensions grants, was £279,468, which did not include the allocation of approximately £60,000 worth of radium.

Sir Leonard Cohen (hon. secretary) having presented the list of awards the Rev. Owen S. Watkins seconded the motion, which was carried unanimously. Sir Cooper Perry then presented the report of the Committee on the Distribution to Convalescent Homes not attached to particular hospitals, and moved that the grants be approved.

This report stated that the president and General Council had this year fixed the sum available for distribution amongst convalescent homes not attached to any particular hospital in London at £3000, being an increase of £1000 over the amount of the annual distribution in recent years. The number of applications eligible for consideration amounted to 57, as compared with 53 last year.

Lord Luke (hon. secretary) presented the list of awards, and the motion, having been seconded by Sir James Kingston Fowler, was carried unanimously.

Second Allocation of Radium.

Sir Cooper Perry presented a report of the Committee on the second allocation of King's Fund radium to hospitals, and moved its approval. Lady Ampthill seconded, and the recommendation was carried.

The report summarising the present position showed that 10 g. of radium had been allocated among 24 hospitals. In a final paragraph the report stated that it was a source of keen satisfaction that through the generosity of Sir Otto Beit, Mr. Roger Parr, and other donors, the King's Fund should have been associated in the privilege of providing the voluntary hospitals of London with a therapeutic agency of great potency and one which still required wide experience and further research in the best methods of its application.

Arrangements for 1931.

His Royal Highness then detailed the arrangements for 1931, and expressed his regret at the retirement from the Council, owing to ill-health, of Mr. W. J. H. Whittall, who more than anyone else was responsible for the Superannuation Scheme for Nurses and Hospital Officers, a scheme which had now been adopted by more than 100 hospitals in London. If we took the whole country, the figures were 300 institutions; a result on which Sir Edward Penton, the chairman, must be congratulated, as well as Mr. Whittall. Sir James Kingston Fowler, who was unable to accept reappointment on the Hospital Economy Committee, would remain on the Council. His Royal Highness said he proposed to appoint two new members of the Council, Mr. Ernest Pooley and Wing-Commander Louis Greig; and to appoint Mr. Samuel, who was already on the Council and the Propaganda Committee, a member of the Revenue Committee. Major Ian Hay Beith was joining the Propaganda Committee in place of Mr. Pett Ridge.

The Lord Chancellor, the Speaker of the House of Commons, and the Governor of the Bank of England had again consented to act in his capacity as President when he went abroad in January next.

On the motion of the Earl of Donoughmore (chairman of the Management Committee), seconded by Dr. H. Morley Fletcher, resolutions were approved delegating powers to the various committees for 1931.

The proceedings closed with a vote of thanks to His Royal Highness, proposed by Major R. I. Tasker and seconded by Sir Walter Lawrence.

REVIEWS AND NOTICES OF BOOKS

Social Control of the Mentally Deficient.

By STANLEY POWELL DAVIES, Ph.D., State Charities Organisation, New York. With Foreword by FRANKWOOD E. WILLIAMS, M.D. London: Constable and Co. 1930. Pp. 389. 13*s*.

SINCE the publication of the Report of the Mental Deficiency Committee the social problem of feeble-mindedness has probably attracted more attention in this country than ever before. The issue of this book is therefore timely. The author has assembled with much literary skill a large accumulation of facts and figures relating to mental deficiency, and has woven them together into a most readable and instructive account of the evolutions which public opinion has undergone towards this subject in the last 50 years. With the beginning of the twentieth century, two events took place which lifted public opinion out of the apathy with which it had up till this time treated the question. These events were the development and application of the Binet-Simon method of testing intelligence, and the development of the eugenics movement, together with the discovery of the Mendelian laws of heredity. These events initiated what the author calls the period of "Eugenic Alarms." Pedigrees such as those of the Jukes, Kallikak and Nam families worked out by Goddard and Estabrook, and the studies of the Hill Folk, the "Pineys," the Dwellers in the Vale of Siddem by other writers all pointed to the conclusion that mental defect was inherited in substantial accordance with simple Mendelian formulæ. There followed the period of the social indictment of the mentally deficient. Practically all forms of antisocial behaviour came to be attributed to the causal factor of feeble-mindedness, and the logical conclusion emerged that the only effective way of dealing with the problem was to segregate persons thus afflicted for their whole lifetimes. Every feeble-minded person was regarded as a potential criminal. The author vividly describes how this policy of wholesale segregation was found to be unworkable and unnecessary. Financial considerations made it unworkable, while it was rendered unnecessary by the distinction which was seen to exist between the comparatively small group of defective delinquents, of whom the generalisation that they were all potentially criminal emphatically held, and the much larger group of defectives who, by proper training and care, could be educated to lead innocent and useful lives. These historical considerations are very clearly set forth in the first half of Dr. Davies's book. The last half is devoted to a description of the modern colony system for defectives, wherein the process of inculcating social habits and aptitudes is carried out, and whereby the subject is equipped to the best of his limited abilities to lead a happy and useful life in the general community.

The author has gone into his subject with a thoroughness that typifies the best American writings on social science, and he has produced a book which will be read with interest and profit by a much wider circle than that of the medical profession. Appearing at a time when the eugenic aspects of the mental deficiency problem are capable of being stressed at the expense of its administrative aspects, this book is especially opportune.

Hygiene.

A College Text-book for Non-Medical Students. By R. C. WHITMAN, A.B., M.D., Professor of Bacteriology and Lecturer in Hygiene, University of Colorado. London: Chapman and Hall, Ltd. 1930. Pp. 327. 12*s*. 6*d*.

Personal and Community Health.

Third edition. By CLAIR ELSMERE TURNER, M.A., Dr.P.H., Professor of Biology and Public Health in the Massachusetts Institute of Technology. London: Henry Kimpton. 1930. Pp. 443. 12*s*. 6*d*.

"HYGIENE" is intended for the use of non-medical students though medical students also will get much benefit from reading it. In the preface the author mentions that some of those who have read the manuscript have suggested that he uses too many technical and purely medical terms, but he rightly answers that those who intend to study hygiene must be prepared to extend their vocabulary before they can understand the new ideas which it is the object of their study to appreciate. Like many recent

American text-books this work exhibits a refreshing departure from the usual order of the subject matter. Realising that there must be some basis of scientific knowledge, however elementary, before it is possible to understand the meaning of hygiene and its purposes, the author devotes the earlier chapters to such problems as the physical and chemical basis of life and death and the nature of disease and heredity. For a book of this kind the presentation of the problems of inheritance and mendelism is exceptionally detailed. The author wisely omits details about the organisation and work of health departments with which so many semi-popular American books have dealt, and the topic of venereal diseases and sex hygiene are so fully covered by separate works that he has found it practicable to omit reference to them also. Otherwise the book is very complete and well arranged. Yet it must have the defects inherent to the dogmatic presentation of scientific questions, and here and there facts are mis-stated or placed out of their true perspective; but it should prove useful to lay persons studying for qualifications in hygiene, especially to school teachers, health visitors, and to those sanitary inspectors who have a sufficient foundation of general education to derive benefit from it. Indeed, members of the medical profession will find material in it which, while not readily accessible in medical literature, has a definite bearing upon the practice of preventive medicine.

Prof. Turner considers public health from the standpoint of what the college or professional man, who is not a sanitarian, needs to know in order to protect his family and meet his responsibility as a citizen. For this purpose his book supplies a substantial body of information presented in 18 chapters and two large appendices. In this edition much material has been omitted and new sections have been introduced. The book has many good features; it is well illustrated, the language is simple, and the bibliography is extensive. Most of the work, however, is of more direct interest to American than British readers and many statements made would hardly survive scientific investigation. We doubt whether it is wise to attempt to convey to non-medical readers so much information on a subject which depends for its understanding upon a sound knowledge of the natural sciences.

Nervous Indigestion.

By WALTER C. ALVAREZ, M.D., Associate Professor of Medicine, University of Minnesota. London: William Heinemann, Ltd. 1930. Pp. 279. 15*s*.

THE subject of this book must interest every general practitioner, for nervous indigestion is a complaint that he is constantly meeting, and it has certainly increased since the war. Dr. Alvarez has succeeded in writing an account of the subject that is both practical and stimulating. The difficulty of interesting and educating medical students in the care of "functional" cases is demonstrated by the general lack of understanding and appreciation often shown to such patients. Dr. Alvarez stresses the important fact that their symptoms are as real and as distressing as are those produced by many, if not all, organic diseases. Insight, tact, patience, sympathy are required in the treatment of nervous indigestion, and Dr. Alvarez in his final chapter quotes many well-chosen passages emphasising this point. The chapters on the taking of a history and on the handling of the nervous patient are admirable. The whole book is written in an amusing style; Dr. Alvarez is plainly sceptical of some current theories, and is no advocate of a "roughage" diet. The daily use of laxatives he strongly condemns, but his warm advocacy of the barbital group of drugs will not meet with general agreement. He makes no mention of valerian. The book deserves to be widely read especially by those whose experience is slight or is limited to hospital practice.

Études radiologiques sur le poumon et le médiastin.

By M. DE ABREU, de l'Institut Brésilien des Sciences et de l'Académie de Médecine de Rio. Paris: Masson et Cie. 1930. Pp. 200. Fr.50.

THIS book contains many original ideas. For example, the author stresses the importance of the tone of an X ray shadow from which, in his view, the depth of a lesion can be accurately judged. Taking the shadow of a rib as corresponding to one of 3 c.cm. of water, the corresponding figure for the heart would be 7·5 and the rib and heart superimposed would give tone of 10·5 to the shadow. On this basis the volume of a lesion is calculated as its square surface multiplied by the tone. In the first part of the book the author describes the principles of thoracic radiology and the various forms of pulmonary tuberculosis as seen by X rays, concluding with a summary and useful list of references. The second part is devoted to an account of the mediastinum and describes the normal and abnormal X ray shadows which occur and, of course, vary with the angle from which the radiogram is taken. The third part deals with the radiology of the heart and intrathoracic vascular system, and contains a list of references to work on the X ray examination of the mediastinum. The book contains 79 figures and 42 radiograms, which are very well reproduced, and it should be read by all interested in thoracic radiology.

Laboratory Pediatrics.

By JOHN D. LYTTLE, A.B., M.D., Assistant Clinical Professor of Diseases of Children, College of Physicians and Surgeons, Columbia University, N.Y.; Assistant Attending Physician, Babies' Hospital, Medical Center, New York. Vol. XX. Clinical Pediatrics Series. London: D. Appleton and Co. 1930. Pp. 189. With Vols. XIX. and XXI. 32*s*.

THIS book contains, in a summarised and tabulated form, the chief laboratory findings in children's diseases under the obvious headings.

The charts record the results in individual cases. The series of sugar-tolerance curves in different conditions is of especial interest, as is also the chart showing the seasonal variation of serum calcium. The author expressly disclaims any intention to produce a laboratory manual, and in order to cover the ground in a book of this size brevity has clearly had to be a leading consideration. Space might, however, have been saved in certain places in order to allow expansion elsewhere, for example, illustrations and descriptions of intestinal parasites could have been omitted, since they can readily be found in the appropriate literature.

The book as a whole makes available in a compact form a considerable body of sound information which has not been previously collected in one volume. The material is almost exclusively American, but the conclusions are of general application, and we notice no omissions of importance. It will be found a useful and reliable work of reference.

THE LANCET.

LONDON: SATURDAY, DECEMBER 27, 1930.

A PUBLIC HEALTH CODE.

THE chaotic state of our local government and public health law is a remarkable tribute on the one hand to our national good temper and on the other to the competence of our local government officials. But there is no virtue in mere chaos. Everyone, therefore, will welcome the announcement that the Ministry of Health, having tidied up the poor-law statutes in 1927 and again in 1930, is now going to attack the law of local government and public health. A committee of departmental and other experts, whose names we announced last week, has been appointed to consider the preliminaries of rewriting the existing legislation in orderly form, the heads under which the new law should be grouped, and the amendments deemed desirable for facilitating consolidation and for securing simplicity, uniformity, and conciseness.

The effort is overdue. Even apart from last year's changes, twentieth century local government could not go on indefinitely under nineteenth century statutes. To name but a few Acts which the committee will have to consider, there are the Municipal Corporations Act, of 1882, the charter of the boroughs, the Local Government Act of 1888, which created county councils, and the Act of 1894, which created parish councils. Somewhere in the statute-book, but in no easy place to find, search will reveal the attributes of that elusive but important entity, the county borough, sometimes wearing the clothes of a county council, at other times those of a municipal corporation. Then there are the landmarks of the movement towards fewer and larger local authorities, the Rating and Valuation Act of 1925, and the Local Government Act of last year. The latter, while inventing guardians' committees and public assistance committees, abolished the guardians themselves but preserved, somewhat obscurely, a bundle of clauses as to guardians' qualifications, elections, and term of office, because these otherwise repealed enactments were (by a wicked but convenient stroke of legislation by reference) needed for rural district councillors. Almost every local authority has its statutory peculiarities in matters which often could be standardised and governed by one common code. For instance, the disqualifications for membership have petty variations for which there seems no better justification than the muddle of piecemeal legislation. Diversities in matters like audit may be inevitable but close examination may discover opportunities for simplification. As for the Public Health Acts, they contain masses of irrelevant police provisions. The main public health law is based on an Act of 1875. A text-book writer would have to take account of amendments and extensions under 40 or 50 subsequent statutes. Here, too, there is the added complication of the difference between the general and the local law. Once again the report of the Select Committee on Local Legislation is recommending that a new Public Health Bill be "introduced without delay" in order to save time and money by making universal the powers given by local Acts to individual councils in the past five sessions. The question of raising the general standard of public health by progressive legislation must, however, be kept separate from the question of consolidating the existing enactments. The Health Ministry's new committee is concerned with the mechanics rather than the merits of the law. It would be unfortunate if reformers blocked the sensible and clear re-statement of existing legislation in their desire for substantial advances. That would be a misunderstanding of the limitations of the committee's task. Indeed, as was the case in recent poor-law legislation, it is necessary first to find out and declare the existing law, before fresh reforms can be framed. The new committee will busy itself with no other amendments than those which serve to clear the ground.

When will the committee's labours show tangible results? Some think in three years, others in five. We trust that Lord CHELMSFORD will prove a chairman who can drive a willing team fast enough to falsify these estimates. A period of minority government in Parliament, when the Cabinet cannot make progress with substantial party measures, is the very time for passing Bills of the kind which the new committee will evolve. The committee, we understand, has already met. Its personnel is well chosen. Outside interests are represented while, on the departmental side, there are experienced legal advisers from the Health Ministry and the Home Office and (for this is largely an expert draftsman's task) a strong contingent of present and former Parliamentary Counsel. Probably the work, when complete, will leave ragged edges on other sides of public administration—education, for instance, the law of highways and those subjects with which the Home Office is concerned. Their turn for clarification will come. Meanwhile, is it too much to ask that the proposals for the new local government and public health codes should be available in print next year?

AGRANULOCYTOSIS.

WHEN SCHULTZ,[1] in 1922, described agranulocytosis he believed it to be an entity, probably caused by a specific micro-organism or some other toxic agent. Clinically, the condition he described is characterised by necrotic ulceration of mucous surfaces, usually about the mouth, with pyrexia and extreme prostation. The blood picture is peculiar, including leucopenia with complete or almost complete absence of granular polymorpho-

[1] Schultz, W.: Commun. to Verein für Innere Med. und Kinderhk., July 3rd, 1922.

nuclear cells—neutrophils, eosinophils, and basophils alike. The red cells and platelets, he said, show little or no diminution and there is no departure from normal in bleeding or coagulation times.

Since these observations were published many similar cases have been placed upon record, but no agreement has been reached about ætiology. The search for a causative organism has been fruitless, and the claims of various bacteria isolated from surface lesions and from the blood have none of them been confirmed. In opposition to SCHULTZ various workers have pointed out a close relationship between the blood picture of agranulocytosis and that of other conditions whose ætiology is to some extent understood—notably, certain toxic states. The most important poisons so far implicated belong to the arsenobenzol group of drugs; it remains uncertain whether it is the arsenic or the benzol which is the toxic agent, but in view of the well-known action of pure benzol upon bone-marrow it seems reasonable to blame the latter. Numerous cases of agranulocytosis following arsenobenzol therapy have been placed upon record, and AUBERTIN and LÉVY,[2] while inclined to suspect the benzol radicle, point out that cases have also been recorded after the use of bismuth preparations and in at least one instance of untreated syphilis. They think that syphilis may act as a predisposing cause by damaging the bone-marrow and thus rendering it susceptible to toxic agents, such as bismuth, arsenic, and benzol. SCHULTZ, while freely admitting that the blood picture may be brought about by various poisons, regards all such cases as secondary or associated, to be strictly differentiated from pure agranulocytosis. At the same time, it is almost impossible to dissociate his pure agranulocytosis from numerous other well-recognised conditions. Thus, with the addition of hæmorrhagic manifestations and a diminution of the platelets, the picture, both hæmatological and clinical, becomes that of the "aleukia" of FRANK, and this again may be indistinguishable from acute aplastic anæmia; while without an examination of the bone-marrow both these conditions may be indistinguishable from "aleukæmic leukæmia." Finally, an almost identical picture may appear in the course of chronic trinitrotoluene poisoning. BENHAMOU [3] is strongly of the opinion that agranulocytosis constitutes a syndrome whose actual appearance may be brought about by the action of divers toxic agents, but only if there is an innate susceptibility of the blood-forming system—in other words, a diathesis. Critics may say that the appearance of a "diathesis" in a French survey of such a subject is inevitable, but there is much to be said in favour of BENHAMOU'S view. All hæmatologists from time to time come across bloods with a marked diminution of the polymorphs, usually showing moderate leucopenia with a lymphocyte percentage of anything up to 50. The subjects, as a rule, are females, and may be in perfect health, though they generally have a tendency to contract minor infections. Such people may reasonably be regarded as possessing an agranulocytic diathesis. BENHAMOU points out that even in "pure" agranulocytosis the leucopenia described by SCHULTZ is not necessarily present. Cases have been reported with a white cell count of 10,000 and more, though the cells have always been all, or nearly all, mononuclear. BENHAMOU himself has shown that even in cases with a leucopenia it is possible by the injection of adrenalin—a procedure first recommended by A. G. GIBSON [4]—to raise the white cell count to 10,000 or more, but even so the added cells are all mononuclear.

The differential diagnosis of agranulocytosis has many pitfalls and the condition is probably far commoner than the diagnosed cases indicate. The necrotic and ulcerative lesions about the mouth may lead to a diagnosis of diphtheria, of Vincent's angina, or even of aleukæmic leukæmia. From the first two of these conditions it may readily be distinguished by examination of the blood, but it may be impossible to establish the diagnosis from aleukæmic leukæmia without examining the bone-marrow. The severe toxæmia and pyrexia may lead to a suspicion of typhoid, pneumonia, or some other acute infection, and here the response to adrenalin may give valuable aid. The appearance of bullæ and vesicles either upon mucous surfaces or skin may simulate pemphigus, chicken-pox, or even small-pox, but the leucocytic formula of blood or vesicular fluid should serve to differentiate it from these. Were the blood examined with more frequency in grave ulcerative conditions associated with fever the condition would probably be diagnosed far more often.

A striking peculiarity of the "pure" agranulocytosis is its predilection for the female sex; over 80 per cent. of recorded cases of this type have been in females. This peculiarity does not, however, extend to cases occurring after arsenobenzol treatment—possibly because of the greater employment of such treatment among males. Among the cases following antisyphilitic treatment a few recoveries have been recorded; apart from these the issue has been almost always fatal. A few cases have been reported in which the patient has recovered sufficiently to be discharged as cured, but in several of them there has been recurrence and death within a few months. These cases offer some evidence in favour of belief in the importance of the constitutional factor. Such recorded cases as have survived have been treated by leucocytogenic agents such as turpentine or milk injected intramuscularly. Where a fixation abscess results, recovery—temporary at any rate—may be looked for; but it remains doubtful whether the fixation abscess is really useful except perhaps for prognosis. In most conditions where the system retains enough reactive power to produce a fixation abscess recovery will be the rule. BENHAMOU advocates the injection of adrenalin along with the leucocytogenic agent, and at least it can do no harm.

[2] Aubertin, C., and Lévy, R.: Annales de Méd., 1930, xxvii., 151.

[3] Benhamou, E.: Ibid., p. 165.

[4] Gibson, A. G.: THE LANCET, 1926, ii., 948.

THE FUTURE OF SURGERY.

THIS is an age of prophecy; during the last few years a series of essays on the future of almost everything has appeared in print, and recently more than one eminent surgeon has discussed the future of his art. The latest addition to the goodly fellowship of the prophets is Dr. A. F. HURST, who, in *Guy's Hospital Gazette* for Dec. 13th, considers the future of surgery. This he places in the hands of the general practitioner. More accurate diagnosis, he thinks, will rob the surgeon of a very high proportion of his patients. Dr. HURST, in illustrating his thesis, naturally thinks of disorders of the gastro-intestinal tract. He recalls an occasion 23 years ago when it seemed inconceivable that duodenal ulcer, which at that time had never been diagnosed at Guy's Hospital, could be a real and common condition masquerading as the familiar acid dyspepsia of the medical out-patient department. The treatment underwent a violent revulsion from mist. gent. et sodæ to radical operation, but Dr. HURST still believes—and is certain that surgeons agree with him—that the best treatment lies in some middle way. The possibilities are suggested by the history of gastric ulcer during the last 25 years. The student of to-day, in his opinion, will be able by the time he goes into practice to recognise the earliest symptoms suggesting the presence of an ulcer and to confirm his suspicions with the aid of the radiologist—and possibly also of the biochemist if a test-meal and the search for occult blood in the stools is beyond his own powers. If an ulcer is present he will give the only adequate treatment: rest in bed on a strict diet for four, five, or more weeks until all pain, tenderness, and rigidity have gone, the last trace of occult blood has disappeared from the stools, and there is no longer radiographic evidence of an active ulcer. He will then treat thoroughly all foci of infection in the mouth, throat, and nose, and will instruct the patient in the régime which he must follow for the rest of his life if he is to remain free from symptoms.

Even cancer and gall-stones, Dr. HURST thinks, will trouble the surgeon of the future in very small numbers only. Just as there are bound to be a few cases of perforation of an ulcer in patients who have had such slight symptoms that they have not sought advice, so there will be cases of malignant disease which must be removed. Dr. HURST, however, confidently hopes that the prevention of cancer will be in sight 25 years from now. Here again much depends on the general practitioner, who has first of all to learn that indigestion of any kind or loss of appetite, occurring for the first time in a patient over 40 years of age and not responding to simple treatment within a week, demands further investigation. Cancer, in Dr. HURST'S opinion, never develops in a healthy stomach and the care of the practitioner in preventing and treating ulcer should prevent one-fifth of all cases of carcinoma of the stomach. The remaining four-fifths have achlorhydria or very low acidity, probably due to an antecedent chronic gastritis, which again it is the duty of the practitioner to find and treat. Unfortunately only a few cases of chronic gastritis show direct symptoms, but they usually result from some easily recognised cause such as acute food poisoning and gastric influenza. Even if the patient appears to have recovered completely from these conditions, a test-meal should be given a month or two afterwards and any achlorhydric gastritis revealed should be treated without delay. Most other cases of chronic gastritis, he says, are the result of excessive cigarette-smoking, alcoholic excess—especially on an empty stomach—pyorrhœa, or chronic infections of the tonsils or nasal sinuses. "Medical" cholecystitis is commcn enough but too rarely diagnosed. Most of the cases are cured by hexamine in doses up to grs. 300 a day given with sufficient alkalis to keep the urine completely alkaline, especially if combined with "drainage" of the gall-bladder by magnesium sulphate given before breakfast. If early cholecystitis be treated in this way the future of gall-bladder surgery should be a blank page.

The only scope which Dr. HURST gives to the surgeon of the future is in tumours of the brain and chest, but he ventures to hope that the work of CUSHING, TUDOR EDWARDS, and MORRISTON DAVIES may lead to earlier diagnosis and an advance comparable to that in abdominal surgery.

MINERVA.

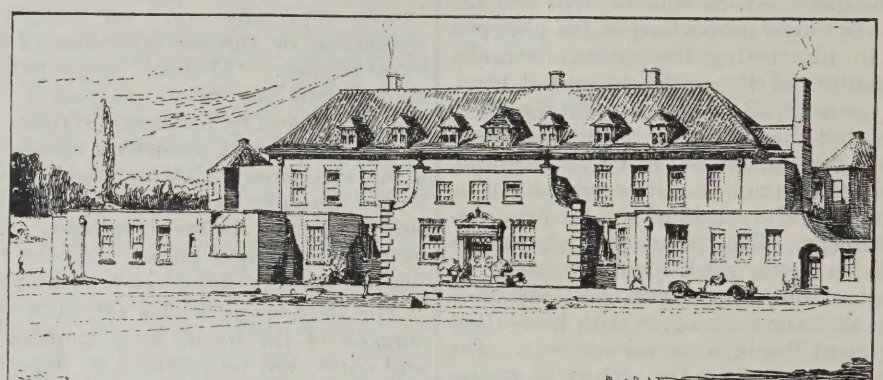
THE thirtieth edition[1] of the Year-book of the Learned World with the well-known title has reached the limit of size. The present edition is 25 sheets larger than the last, although many of the entries have been shortened, and at its present rate of growth the next edition would be at least 20 sheets larger. Dr. Gerhard Lüdtke, who has edited the Year-book since 1905, considers that the limit of price has also been reached, and he hopes to find some different arrangement of the material by which to effect some economy both in cost and size. As a work of reference Minerva is amazing in its inclusiveness and accuracy. Its editor tells of difficulties in getting full details from Japan, with which he is now satisfied, and from Russia, which still leave something to be desired. But even the trained expert seeking to verify something outside his usual works of reference will rarely be disappointed in his search, although in this issue the names of assistant professors in American universities and colleges have been perforce omitted, those of associate professors being retained. It seems to us doubtful if compression or abbreviation could usefully be carried further without making reference less easy, for the list of contractions and symbols already occupies nine columns of the preface, and the office of Regierungsobermedizinalrat is represented by ROMR. The publisher suggests that Minerva would be found useful abroad in all scientific institutions and libraries, as well as to editors and publishers in general. It is our experience that anyone who uses it becomes an addict.

[1] Minerva, Jahrbuch der gelehrten Welt. Thirtieth edition. Berlin and Leipzig: Walter de Gruyter and Co. 1930. Three volumes. Pp. 3546 + 799. M.96.

ANNOTATIONS

THE SCHOOL SANATORIUM.

THE rising walls of the new sanatorium of Epsom College remind us of the part which the sanatorium plays to-day in the administration of a big public school. Sixty years ago few public schools made large and organised provision for dealing with epidemic disease among their charges. There would be accommodation for accidents, and where the separate house system existed the housemaster, and whoever might act as his matron, were prepared to deal with the sick boys in their particular establishments. When the value and even the necessity of a sanatorium or infirmary was perceived all this was changed speedily, and every large public school possesses to-day accommodation for the sick of the school and its environment, the medical officer of the school acting ex officio as the medical director. So far the pattern is common but variations exist alike in the accommodation which is offered at one school and another and in the quality of the service, nor is there any hard-and-fast rule for the number of beds that should be held in readiness in relation to the numbers in the schools. What this percentage should be is not easy to decide; the ratio of 15 per cent. is usually accepted as the right one, but a case could be made out for a larger or for a smaller ratio. A large number of factors must be reviewed. The public schoolboy nowadays has often led such a protected life at home and at a preparatory school that his five years at a public school may be the period in which he will be attacked by what used to be regarded as the inevitable exanthemata. In such a susceptible community one case introduced from without may produce many cases within; in other words, the number of beds available must have some relation to sudden emergency. Whatever the number of such beds may be in proportion to the number of boys in the school, there must also be beds somewhere for the case that requires watching. These patients if isolated early may be found to be sources of danger, and their prompt segregation will prevent any large call being made upon the general accommodation of the sanatorium. The watching can be to some extent carried on in the boarding houses, but that implies spare rooms of adequate character in those houses. The two different methods of attempting early interference in the possible presence of an epidemic accounts for some of the discrepancies which we may find in the size of the various sanatoriums in relation to the numbers totalled by the schoolboys and those in immediate relation to them—the latter being often within a third in size of the numbers in the school.



Epsom College Sanatorium from the north-west.

Yet another reason exists for a generous supply of beds. The medical officer must have an opportunity of isolating the contacts, and that accommodation should be available during the holidays as well as during the term time, for sickness may break out inconveniently near the end of the term, when the public danger is now perceived of distributing a large number of lads to different parts of the country with the seeds of infectious disease already sown. With, no doubt, certain of these reflections in mind the sanatorium in building at Epsom is large in proportion to the size of the school. But here two other arguments obviously exist for the erection of a large institution. First, the school is rapidly growing in response to its recognised position as one of the great public schools of the country; while, secondly, through its foundation it has so close a connexion with the medical profession that a falling off from a high medical standard would be discreditable.

FINALITY IN CRIMINAL TRIALS.

IN 1927 a man was tried at Edinburgh on the charge of having murdered his mother, and the jury, by a majority verdict, found the charge "not proven." This result was correctly stated in our recent review of the volume containing the account of the case in the Notable British Trials series. The reviewer, in venturing the comment that it was perhaps a little hard on the accused that so recent a case should be so soon re-tried on paper, spoke of him as a man "recently *acquitted* of murder"—a description technically incorrect when applied to a case resulting in a verdict of "not proven." A friendly critic, who will sympathise with the Englishman's difficulty in appreciating the niceties of Scottish procedure, points out that the verdict of "not proven" is strictly not an acquittal; it permits of a re-trial, should new evidence at any time arise. If there were any question of a re-trial on the murder charge, the reviewer's criticism (that the editorial introduction to the report of the trial conveys a strong opinion upon the causes of the death) would, according to English notions, be equally valid. Meanwhile, the distinction between the English and Scottish forms of criminal procedure is worth noting. In England (in the absence of any element of insanity) the verdict is either "guilty" or "not guilty"—in other words, either a conviction or an acquittal. And, as it is an established principle of English law that a man may not be put twice in peril for the same offence, he can successfully plead (in the old law-French phrase) "autrefois convict"

or "autrefois acquit," if he is tried again upon that identical charge. The only form of re-trial in such circumstances in England is where the jury has disagreed. It is surprising how seldom this happens when the requirement of unanimity is borne in mind. A disagreement means no verdict at all; the case then comes on again, usually at the next assizes. On the whole it is unlikely that an English jury will find a man "guilty" after the previous disagreement of another jury. Indeed, if two juries disagree and the case comes before a third jury, it is usual for the prosecution to offer no evidence—which means that the accused gets his acquittal at last. It may also be noted that the Court of Criminal Appeal has no power to order a re-trial in England. The functions of the court in ordinary cases are three: (1) on an appeal against conviction, it can allow the appeal, if it thinks that the jury's verdict is unreasonable or not supported by the evidence, or that the judgment was brought about by a wrong decision of a point of law, or that there was a miscarriage of justice—in any other case it must dismiss the appeal; (2) if it allows an appeal against conviction, it must quash the conviction and direct a verdict of acquittal to be entered; (3) on an appeal against sentence it can substitute a sentence either more or less severe. Many critics think that, where an appeal against conviction has succeeded on some technical ground, the court should have power to order a re-trial; but Parliament does not allow this course. When the Criminal Appeal (Scotland) Act of 1926 set up a similar system of criminal appeal in Scotland, the power to order a re-trial was still withheld. But the Scottish Court, dealing with criminal appeals, has here one power which the English Court does not possess. On an appeal against conviction the court in Scotland is empowered not only to quash the conviction but also to quash the sentence passed and to pass another sentence as if the appeal had been an appeal against sentence and not against conviction. Such are some of the minor differences between English and Scottish criminal law, in addition to the much wider distinctions arising from variations in the legal system, the arrangement of courts, and the statutes applicable to the two countries. In England, of course, there would have been a prompt investigation by the coroner; sworn evidence would thus have been available at a very early stage.

THE NERVOUS TEMPERAMENT.

No part of medical practice more persistently eludes any scientific classification than that dealing with the temperamental variations of individuals and their different reactions to stress and strain. A host of vague generalisations, hazy conceptions, and unadmitted ignorance has been concealed under the term "nervous" and its many alternatives. Dr. Millais Culpin and Miss May Smith, D.Sc., working for the Industrial Health Research Board, have attempted to break the ground around this difficult problem and, although they say that their work is no more than disturbing the surface of this important field, yet their results are of the greatest interest.[1] Over 1000 people of both sexes have been interviewed while actually at work, and the authors think that it is possible as the result of a single interview to elicit nervous symptoms or tendencies and classify individuals according to the amount and severity of the symptoms. When the classification had been made, it was found to agree with independent judgments as to efficiency and capacity for adaptation, and with the results of the dotting test. A curious feature of this test is that obsessional subjects are peculiarly good at it. When the nature of the obsessional temperament is considered, this is less surprising than it seems at first sight, but it should prove a useful aid to diagnosis. As has already been shown by other observers, nervous illnesses depend upon occupational conditions as well as upon predisposition, and a "bad" subject may carry on contented and excellent work under good conditions of employment but break down completely if circumstances become difficult.

The applications of this research to industry are obviously of the first importance. In the first place the heavy absenteeism in some firms from sickness labelled "nervous breakdown" or one of its equivalents could be almost entirely prevented by selection of candidates and sensible attention to conditions of employment. Secondly, there is the choice of supervisors who can undertake the responsibility of direction without undue strain and who are able to oversee the work of others without getting on the nerves of everybody under them. Thirdly, there is the problem, known to all industrial concerns, of the erratic worker who oscillates between very good and very bad work for no apparent cause. Last, but not least in importance, is the question of alleviating the disproportionate suffering of some individuals under conditions of noise, stuffiness, or other unpleasantness which do not worry their neighbours in the least. The findings of the investigators cannot conveniently be summarised, but "nervous" symptoms were found in a very high proportion of employees examined—sometimes as many as 50 per cent. Men and women in authority suffered less than lower grades, promotion apparently acting as a form of selection in this respect. The student group had a higher percentage than the factory group, and women dramatic art students showed a very high percentage of the obsessional type. Finally there was evidence of correlation between the results of the experiments and stigmata of discomfort, such as inability to bear noise and dissatisfaction with work and environment.

[1] Indust. Health Res. Bd., Report No. 61. H.M. Stationery Office. 1930. Pp. 46. 1s.

SUN-BATHING IN A LONDON PARK.

Dr. George Sowden, medical officer of health for St. Pancras, reporting upon a sun-bathing centre in Regent's Park which was opened in August, states that the building is of brick, one-storey high, and measures 30 feet in length by 20 feet in depth. It is divided by folding doors, and each half contains sanitary accommodation and a shower bath. The Sunlight League undertook to provide the salary of a competent supervisor from the date of opening until the end of September, and the centre was open daily from 10 A.M. to 1 P.M. and from 2 to 6 P.M. The children admitted were between the ages of 2 and 5 years. They were not suffering from any definite illness, but were selected from those attending the various welfare centres in the borough as being likely to derive benefit from this form of treatment. The parents were required to sign a form accepting all responsibility in connexion with the child's attendance and were asked to provide a towel, bathing slip, and a sun hat. The children were arranged in groups according to their susceptibility to sunlight; each child was weighed at the first attendance and subsequently once a week. During the brief heat wave in the last week of August and the first few days of

September, the attendance was very good, but it fell off during the remainder of the period when the weather was extremely unsatisfactory. The total number of children entered on the register during the seven weeks the centre was open was 148, and the number of attendances each week was as follows: 44, 90, 293, 249, 152, 112, 86, making a total of 1026. It is difficult, Dr. Sowden says, to express an opinion about the effect on the health of the children. In 33 who made 10 or more attendances, there was an increase of weight in 30, varying from ½ lb. to 2¼ lb. The greatest increase was recorded in the case of two children (brothers), who made the highest number of attendances—namely, 29—and whose weight increased by 2 lb. 2 oz. and 2 lb. 4 oz., respectively, a rate of increase much in excess of the normal. In a few cases, children of a nervous, excitable type, who usually slept badly, were stated to be less restless and to be sleeping better. Some improvement in appetite was also recorded. The general conclusion drawn from the experience gained is that it would be difficult and expensive to maintain a centre exclusively for sun-bathing. During bad weather, although the staff would be in attendance, the number of children would be small or even nil. Dr. Sowden is of the opinion that it would be preferable to combine a sun-bathing centre with a day nursery or nursery school.

EXPERT EVIDENCE ON GUNSHOT WOUNDS.

THE life of a person accused of murder often depends on the expert evidence of the toxicologist but equally often on expert evidence about firearms and gunshot wounds. Frequently a medical man is called upon to give this evidence, although a study of the subject forms no part of the training even of an expert pathologist. We publish on another page an account by Dr. W. Stewart of a case in which his careful experiments and evidence extricated an innocent man from a convincing net of circumstantial evidence. In the *Analyst* for December Mr. G. W. Baker describes an investigation he was called upon to make in Jaffa, and which brought a guilty man to justice. This case is of great interest, as it is the first occasion on which X rays have been used in the examination of bullets for forensic purposes. The nose of a bullet was found in one of the bodies of a murdered family, and its peculiar nose-filling of lead and fibre was readily detected by radiology without mutilating the exhibit. A comparison with 32 different makes of ammunition of the same calibre helped to establish the fact that it was from British ammunition as used by the police. Among the empty cartridge cases found about the room was one which lay in a pool of clotted blood in such a way as to show that the blood had flowed round it and that it had not been dropped some time after the crime. This case was brightly polished—a fact which first threw suspicion on the police. Cartridge cases from the accused's rifle had three characteristic features in common with each other and with this exhibit. The first was a bulge on the side of the case diametrically opposite the extractor mark. It was found, however, that the degree of bulge might vary with the same rifle, and that if it were present at all in a rifle it always bore the same relation to the extractor mark. The second feature was an extractor mark characterised by a series of deep cuts with rounded ends parallel with the rim, and at right angles to these a series of long scratches produced on extraction. There were considerable variations in the extractor marks on different cases fired from the suspected rifle, but in Mr. Baker's opinion there was sufficie evidence to identify the rifle. The third feature w a characteristic pattern of at least 14 marks at t bottom of the pin impression in the cap of the ca tridge case; the general shape of the impressio was found to be sufficient to identify each of t rifles tested. Moreover, the pin impression cou only be produced by the act of firing and not b practice loading and unloading. It was a delica matter to obtain photographs of these impressio They were taken through a one-inch objective a the stage of the microscope was removed so th the case could be held vertically and slowly rotat in a slanting beam of light. The equipment used these investigations included a comparator eyepie a camera lucida, and a micrometer eyepiece. obtain bullets from firing tests in a fit state for co parison, Mr. Baker used a special box divided in six equal compartments by removable cardboa partitions. The first two were filled with cotton was and the others with fine bran; at about four yard range the bullets came to rest in the fourth or fif compartments with little distortion.

As Mr. G. H. Perry, chemist at the War Depar ment, said in a discussion after Mr. Baker's pap it has become possible in the last few years to identi conclusively cartridge components with the weap used. Complicated and delicate instruments a required, and the greatest possible care should b taken of the exhibits to avoid any damage or di tortion. Modern work on firearms is as refined finger-print detection. It needs an expert for i execution, but all medical men ought to be acquaint with its possibilities, as it is the doctor to who appeal will first be made for expert evidence and w very often has the first opportunity of preservi important exhibits.

TREATMENT OF CUTANEOUS TUBERCULIDE

SUBCUTANEOUS and intramuscular injection cod-liver oil and its derivatives has been employe for more than a decade as an auxiliary treatme in tuberculous affections of the skin, bones, a connective tissues. In the condition known lupus pernio, for example, the subcutaneous injecti of 5–10 minims of sodium morrhuate has been fou satisfactory, and on occasion has even brought abo a cure. Jaczewski's use of iodo-morrhuate[1] an outcome of these tentative methods and has be modified by O. Blatt,[2] who recommends a solut of 1 part of tincture of iodine in 20 parts of cod-liv oil, 5 c.cm. being given by intramuscular injecti every 14 days. He does not give iodine by t mouth, as advocated by Jaczewski, and substitut topical applications of cod-liver oil for iodine paintin of the local lesions. The theoretical considerati which underlie the treatment are interesting b highly speculative. They concern the respecti rôles of the fat and lipase metabolism in infect persons, and their reactive potentialities in t biology of Koch's bacillus. Blatt lays stress on t almost specific action of cod-liver oil as compar with other oils (e.g., olive oil), and suggests th its advantage may be a function of the vitam content. For this reason the cod-liver oil injected not previously sterilised by heat, all danger of sep being precluded by the 5 per cent. iodine in the mixtu which is said also to elicit a more potent and pr tracted local reaction with the production of lymph

[1] Przegl. dermat., 1928, No. 3.
[2] Dermat. Woch., 1930, xc., 741.

cytosis. Five to ten intramuscular injections of 5 c.cm. at fortnightly intervals represent the average dosage for adults. In most of them—and with consistent regularity in lupus—fever began to develop on the sixth day. Its maximum was usually on the ninth, and thereafter the temperature fell to normal by lysis, rarely by crisis, in a few days. The reaction, Blatt says, appears to be an essential feature of the treatment and proceeds pari passu with local swelling, hyperæmia, and pain at the site of the injection. In not a few cases a focal reaction was noted in the lupus lesions, which for the time being were distinctly aggravated. The end-results were, however, definite and encouraging; "the patients' general condition was improved, tuberculous ulcers and sinuses after operations healed promptly, and recurrences were rarely observed." Blatt confirms the statement that "lupus vulgaris can be completely cured by this procedure alone." Though he does not give details or results in tabular form, he states that 120 cases of lupus vulgaris, two of tuberculous verrucosa cutis, six of disseminated papulonecrotic tuberculides, and five of erythema induratum of Bazin responded favourably. In five cases of lupus erythematosus in which the evidence suggested a tuberculous ætiology, the method completely failed to give relief. Blatt's conclusions are: (1) that Jaczewski's injections afford a rapid and certain cure of the ulcerative types of tuberculosis cutis; (2) that they may be regarded as the method of choice in the treatment of all types of tuberculide; and (3) that in the treatment of lupus vulgaris the method is a valuable auxiliary to local measures.

THE DENTISTS REGISTRATION FEE.

COMPLAINTS have been heard from dentists that they have to pay a substantial fee annually for their entitlement to practise, whereas a single fee ensures their medical colleagues a place on the Medical Register. A memorandum issued by the Registrar of the Dental Board and printed as an appendix to its minutes sets out the official reply to this and certain other prevalent misconceptions. The Dentists Act of 1921 laid down as a return for the right to practise dentistry given to registered persons that a fee should be charged each year for retention of the name on the Dentists Register. This fee is akin to the payment made annually by solicitors and auctioneers. The Act laid down that it was not to exceed £5; at the present time it is £4. Solicitors in London have to pay £9 and in the country £7 for their annual practising certificate. The fee might have been made payable to the State through the post office or some other agency, but it was made payable to the Board and the Act laid down that, after covering the expenses of the Board, the money should be allocated to purposes connected with dental education and research. Thus while the primary function of the Dental Board is to protect the public by keeping a Register on which is entered the names of all properly qualified persons who desire to practise dentistry, and by removing therefrom the names of persons in whose personal conduct the public can no longer have confidence, the secondary function of the Board is to collect the fee prescribed in exchange for the granting of the right to practise, and to expend moneys so received, and not reserved for their primary purpose, upon "dental education and research or any other public purposes connected with the profession of dentistry." The memorandum insists that the Board was established for the benefit of the public and not for the benefit of the dental profession. It is in no sense a professional protection society, and dentists who desire to combine to further their own interests must become members of some society of their own for that purpose, such as the British Dental Association, the Incorporated Dental Society, or the Public Dental Service Association. The Board is not concerned with the fees which dentists may charge or with the remuneration which they may receive. The only benefit which dentists are entitled to expect in return for the payment of their annual fee is the right to practise dentistry, and the protection which the Board can afford to them in this respect by instituting proceedings against unregistered persons for infringement of the Act. Had the annual fee been payable to the Government, as it easily might have been, dentists would have had little, if any, say in regard to its expenditure; the Board, on the other hand, while carrying out the primary duty of protecting the public, is able to have regard to the interests of dentists in so far as it serves a public purpose connected with the profession of dentistry to do so. Questions are often asked as to how the not inconsiderable income of the Board is expended. This income in 1929 was £43,000, and after paying the fees and travelling expenses of members, the salaries of the administrative staff and office expenses, including the publication of the Dentists Register, £335 was spent on an election of direct representatives of the profession to the Board; £1224 was spent on the prosecution of unregistered persons and of bringing cases of alleged professional misconduct before the Board, and other legal expenses and other items such as income-tax and the cost of prescribed examinations for persons desiring to be registered were provided for. In addition to this, post-registration and post-graduate lectures were given at a cost of £718; £5000 was granted for research; £4000 was spent on instructing the public in the importance of attention to their teeth; £21,000 was allocated for educational grants, and there was a balance for the year of £1434. The grants for research are expended through the Medical Research Council and the Department of Scientific and Industrial Research. Of the money for educational grants, a part is given to assist students educationally well qualified but not in a financial position to take out the curriculum—many of them are the sons of dentists registered under the Act of 1921, who in the old days would have been apprenticed to their fathers—and a part to other students carefully selected from secondary schools. The remainder is spent upon improving the teaching in the dental schools so that students may be as well qualified as possible to attend to the requirements of the public. In addition to this, considerable sums have been granted towards the building of dental schools and to improve their equipment so that the teaching may be given in the best possible circumstances. The memorandum concludes by pointing out that although all this money is primarily expended for the benefit of the public, incidentally the members of the dental profession do benefit considerably thereby.

A MISSION TO CHINA.

SOME years ago the Milbank Memorial Fund made a grant for improving the health of the population in a rural county of China supporting 400,000 inhabitants. The experiment is to last for five years, and is to include public health measures, agricultural extension, industrial education, social surveys, and research in methods of teaching. It

may appear untimely to undertake this task in a period of political crisis, but it is felt by the Chinese leaders of the Mass Education Movement that the experiment may be a foundation for more effective government activities when the situation improves. Hitherto, few public health measures have been put into effect in China, especially in rural districts; no accurate vital statistics exist, but records of sample populations indicate a death-rate of 30 per 1000, and an average expectation of life at birth of about 35 years. The inhabitants of Ting Hsien city, the headquarters of public health activities, are ignorant, poor, and superstitious; social conditions are bad, and in the whole county under experiment there was no one qualified to practise Western medicine when the scheme was initiated. Agricultural and educational work were begun in 1927 under Dr. James Yen, and have made considerable progress; in 1929 public health work was started, a small dispensary and clinics were established at the county seat, and a survey of health conditions and the collection of vital statistics were undertaken. Last spring vaccination against small-pox was introduced, and a preliminary programme for the extension of health services was formulated. Certain specific health problems are now being attacked—notably small-pox, trachoma, tetanus, and gastro-intestinal diseases—and gradually activities will extend to maternity and child welfare, while health education will be continued in the schools and among the general public. Hospital accommodation—necessarily limited at the outset—is to be provided for cases not involving serious operations or chronic conditions; maternity cases will be accepted, however. Research into the purification of water-supplies, protection of food, and disinfection of human fæces used for fertilising purposes will be undertaken. A health centre to be established in Ting Hsien will provide headquarters for the administrative and supervisory staff, a small infirmary of 25 beds, a pharmacy and public health laboratory, an out-patient department, and a lecture room for persons in training. The personnel will include a medical director, an assistant health officer, a public health nurse, a woman doctor to supervise maternity and child welfare work, an educational director, a laboratory worker, and a pharmacist. The infirmary will have a separate staff, including a physician, clinical aides, and nurses. Sanitary inspectors, visiting aides, and midwives will be trained at the centre, and a gradual extension of activities will be made to neighbouring villages. The aim is to make the experiment as economically as possible, in order that similar work may be carried on by the Chinese themselves.

INTERRUPTION OF PREGNANCY IN RUSSIA.

RECENT articles in the *Medizinische Welt* deal with the legalisation of abortion in Russia, which is having its effect on popular opinion in the adjoining countries. In Russia even before the revolution of 1917 abortions were frequent, but after it they became so numerous, and were so often followed by serious illness or death, owing to the conditions of secrecy surrounding the practice, that in 1920 the interruption of pregnancy, apart from medical reasons, was authorised with certain safeguards. The regulations prescribe that the operation may only be performed by a doctor, and in a hospital or officially approved establishment; any person other than a doctor attempting such an operation is liable on conviction to a fine of £50 and a year's imprisonment, extended to five years if the woman dies. In 1926 66 men and 805 women were convicted of this offence. The woman who desires this operation on other than medical grounds appears before a board which decides in the first place if there is any contra-indication; if none, her request may be approved if she is unmarried and workless, unmarried with one or two children, married with more than three children, or an insured woman who is suckling a baby. Other points, such as poor constitution, no private residence, or a husband on military service, may be taken into consideration. The operation must be done during the first three months of pregnancy. Abortions are now tabulated like births; in Leningrad during 1929 the births numbered 39,058 and the abortions 53,512; the birth-rate, for a population of 1,700,000, is 23 per 1000, which is conspicuously high. The deaths after abortion are not separately stated, but it is believed the mortality is higher than after parturition, though complications are decreasing. The chief difficulty is to provide enough doctors and equipment everywhere, especially in the country districts; but that is being done. The motives for the interruption of pregnancy may be found in the high cost of living and a desire to weaken the social prestige of the family, which helped in the early days of the revolution to buttress the old régime. But there are some even in Russia who would prefer to encourage education in preventive measures.

THE SERVICES

ROYAL ARMY MEDICAL CORPS.

Maj. J. M. Pinkerton is granted a temp. commn. in the rank of Capt., and relinquishes the rank of Maj.

The undermentioned Lts. to be Capts. (Temporary Commissions): J. D. Dillon, B. H. H. Tripp, G. de N. M. Somers, J. B. Carrigan, and R. S. de C. Bennett.

Lt. A. H. Weston resigns his commn.

ARMY DENTAL CORPS.

Lt. H. Quinlan to be Capt.

TERRITORIAL ARMY.

Capt. W. T. G. Boul resigns his commn.

Lt. L. F. Richmond (late R.F.A., T.F.) to be Lt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Lt.-Col. J. R. Pooler, having attained the age limit, retires and retains his rank, with permission to wear the prescribed uniform.

INDIAN MEDICAL SERVICE.

Maj.-Gen. F. H. G. Hutchinson retires.

DEATHS IN THE SERVICES.

Lieut.-Col. James Hickman, R.A.M.C., retd., who died on Dec. 18th, qualified with the L.R.C.P., L.R.C.S. Edin. in 1880, and joined the Royal Army Medical Corps two years later. In 1886 he served with the Burmese Expedition (medal with clasp), and in 1892 accompanied the expedition to the Gambia. He was also with the Ashanti of 1895–96 (star), and took part in the operations in Sierra Leone of 1898–99 (clasp). He saw considerable service in the South African War, being present at the relief of Ladysmith, the actions at Colenso and Spion Kop, and the operations on Tugela Heights (medal with clasp, bronze star, and 5th class Medjidie). He was also made Brev.-Maj. He retired in 1904, having reached the rank of Lt.-Col. in 1902.

HOSPITAL SWEEPSTAKES.—The recently formed Sweepstakes Inquiry Committee is sending out 100,000 copies of a questionaire designed to gauge public opinion on the proposal to organise sweepstakes on behalf of English hospitals. Recipients are asked to say if they object to sweepstakes on principle, if they would support an attempt to legalise them, and if they would join a "preliminary hospital sweepstake outside this country" when visiting a country where such things are not illegal.

MODERN TECHNIQUE IN TREATMENT

A Series of Special Articles, contributed by invitation.

CCCXV.

ASPHYXIA FROM COAL GAS.

THE toxic property of coal gas is due to the presence of carbon monoxide (CO). Death from poisoning by coal gas, except with deliberate intent, is comparatively rare, partly because the CO is considerably diluted, and partly because the unpleasant odour of coal gas gives timely warning of its presence. If a mild degree of poisoning is treated without undue delay, the patient is rapidly restored to normal. Employees of the Gas Light and Coke Company who are exposed to the smell of gas in doing repair work are advised to cease work for a spell and go for a short walk in the fresh air when they notice any dizziness, and to drink milk and soda. The theoretical basis of this treatment may not be very clear, but in practice it seems to be effective. There is some evidence that these men acquire a certain degree of immunity which enables them to withstand concentrations of coal gas such as would seriously affect persons unused to this work; also that these workmen show an average longevity greater than the normal throughout the Company. There is certainly no evidence in the contrary direction. CO requires a concentration of 0·5 per cent. in order to be rapidly fatal, while a concentration of two parts per 10,000 can be inspired for a prolonged period without ill-effect.

Patients who are unconscious when first seen provide a more serious problem. CO poisoning is far more common, though less notorious, in countries where charcoal fires are in use, and in districts like Turkey, where houses and harems are heated by charcoal braziers. I have seen many more cases of CO poisoning in parts of Italy and Turkey where no coal gas is used than in London. Since this form of suicide has become fashionable it has attracted much notoriety in the press.

Physical Signs and Symptoms.

CO is poisonous on account of its great affinity for hæmoglobin, whose power to convey oxygen is thus arrested, and anoxæmia ensues. The chief and most important result in serious cases is profound coma. The skin is reddish, the face pink rather than pale. Some authorities state that the red corpuscles are diminished. Cardiac dilatation and irregularity is present, and usually tachycardia; sometimes bradycardia. The pulsation in the neck is visible and violent, and vomiting may take place. Headache, giddiness, nausea, and indigestion are prominent symptoms, also weakness (especially of the lower limbs), fatigue, and drowsiness. Patients may complain of pain in the back and epigastrium, and muscular incoördination and diminution of activity of the five special senses may be noticed.

First-aid.

The first rule is promptly to remove the patient from the cause, or the cause from the patient. In most cases first-aid has been given by a layman before the doctor arrives, but this has not always been inspired by right principles. Those who have to instruct laymen in first-aid classes on this matter would give concrete and definite rules for one who finds a patient poisoned by CO. The following routine is that taught by me:—

Send someone to fetch a doctor, with instructions to explain to him the urgency and character of the case, and to return at once. Someone else should procure an oxygen or, better, an oxygen and CO_2 apparatus at hospital or chemist and obtain an ambulance.

In many cases a gas-filled room must be entered. If so, take two deep breaths and apply a handkerchief, towel, or other material (wetted if possible) to mouth and nose. Seize a stick or umbrella, and go in on all fours or crouching. Some months ago it was stated in a coroner's court that it was a mistake to enter a room on all fours in which coal gas had been recently liberated, on the ground that the poisonous gas was heavy and sank to the floor. The poisonous ingredient is, however, not the heavy CO_2 but CO, which is somewhat lighter than air. The tendency is for coal gas to rise when liberated in ordinary atmosphere, and later to become disseminated by diffusion throughout a room free from draught. Proceed rapidly to the window and break it with whatever implement is available. Then turn off gas tap or, if possible, discover the leak. It is necessary to remember that finding the leak with a lighted match is effectual, but fatal. Drag the patient out into the passage by his heels, and undo tight clothing, with help of bystander. Most important now is the performance of artificial respiration.

Artificial respiration.—If the patient is lying on his face, employ Schäfer's method, which is, generally speaking, the best method of artificial respiration. If the patient is lying on his back, and an assistant is present to hold the tongue out, do not waste time in turning him over if there be any difficulty in doing so, but perform artificial respiration by Sylvester's method. As a rule attempts at artificial respiration are abandoned too soon. They should be continued for several hours, changing the operator as he gets exhausted. Artificial respiration should not be started if the patient is breathing moderately well, as it will retard rather than help his respiration; nor should it be continued after his breathing is established. On the other hand, artificial respiration should not be abandoned because the patient appears to be dead. If he is not, this lack of perseverance may kill him. After artificial respiration has been successful in restoring life the following directions are important:—

Cover up the patient and keep him warm with hot-water bottles and wraps, protecting him from cold draughts. When he is conscious enough to swallow, and only then, give him hot coffee or tea. It is most important to give him only a few drops with great care at first, to test his ability to swallow.

When he is removed to a hospital or elsewhere the transport should be effected with the least possible disturbance to the patient. Rest is essential.

Treatment Other than First-aid.

Oxygen.—The main point of treatment is to get oxygen into the blood. When the patient has started breathing a suitable inhaler, to give 5 per cent. of carbon dioxide, should be procured if possible, since this gas stimulates the respiratory centre. Personally, I have found the hypodermic injection of oxygen in large quantities over limbs, buttocks, back, and abdomen, producing extensive emphysema of the skin, to be efficacious and safe. An advantage is that it can be carried out rapidly at the same time as all other measures are being adopted. The oxygen thus injected subcutaneously is rapidly absorbed and leaves no ill-effects. It must be remembered that the amount of O_2 which can be absorbed this way is small compared to that which can be taken in by the normal route—the lungs. Fresh air and artificial respiration as stated above are therefore of paramount importance. Some of the few who have given a fair trial have not found benefit but no one has found it harmful. On the other hand, most drugs which have been tried have done more harm

than good—e.g., stimulants, strychnine, camphor, and ether.

Blood transfusion and bleeding may be used together, but fail to do much good after the first hour.

The pulmotor or lungmotor apparatus are sometimes useful in skilled hands, but usually less efficacious than continued artificial respiration. In any case this should be used pending the arrival of the other two.

Contra-indications.

Stimulants are contra-indicated. It is not wise to dash cold water on the patient; you will incur the responsibility of causing the fatal attack of pneumonia which may result. The patient should not be allowed to stand or sit up, and any form of violence should be avoided. Time should not be wasted, since prompt treatment is the most important factor in recovery.

D. A. COLES, M.D., M.R.C.S.,
Medical Officer to the Gas Light and Coke Co.

MEDICINE AND THE LAW.

Unauthorised Autopsy.

UNDER this heading the *Solicitors' Journal* has noted an interesting Canadian case, recently reported, in which a plaintiff had certainly a genuine grievance. He engaged a firm of undertakers to make all preparations and arrangements for the burial of his dead wife, the body being given into their charge for this purpose. He subsequently discovered, so at least he alleged, that the undertakers had allowed a surgeon to enter their premises and, without any permission from himself, to conduct an autopsy and remove from his wife's body a portion of the anatomy. He claimed damages for this action, both from the undertakers and the surgeon, on the ground of the mental anguish which he had naturally suffered thereby. The court held that the action, being solely for the recovery of damages for mental anguish, was not maintainable. As our contemporary points out, English law has always made a difficulty about recognising property in a human corpse. Thus the plaintiff, with whose feelings everyone will sympathise, was left without remedy.

The point is perhaps worth elaborating. The judges have held, more than once in England, that there is no property in a corpse. Executors, however, are prima facie entitled to custody of a deceased person's body for the purpose of performing their duty of burial. It is conceivable also that there might be property in a mummy. If a corpse is stolen, an indictment would lie for stealing the shroud or wrappings round the body; the property in the shroud after burial remains in the person to whom it previously belonged. At common law a man could not legally dispose of his body after death, but the Anatomy Acts have made a breach in this principle. Section 8 of the Act of 1832 allows a man, either in writing or verbally before two witnesses, to direct that his body be examined anatomically; dissection may then follow (subject to certain conditions) unless the surviving husband or wife or the nearest known relatives require interment without such examination. Section 7 of that Act, not cited by our contemporary, would have had some bearing if circumstances similar to those in the Canadian case had occurred in England. The Section says it shall be lawful for any executor or other party having lawful possession of the body of any deceased person, *and not being an undertaker or other party intrusted with the body for the purpose only of interment*, to permit the body to undergo anatomical examinatio unless either the deceased had expressed a desire t the contrary or the surviving husband or wife or an known relative of the deceased shall require the bod to be interred without such examination. The word cited in italics above convey the implication that th action of the Canadian undertakers, if it had take place in England, would have been unlawful. Ther might thus have been a breach of duty even if th resultant damages still presented legal difficulty.

Foreign-made Surgical Instruments: Indication of Origin.

Proceedings were taken by the Board of Trad lately against a surgical manufacturing compan on a charge of having failed to indicate in its catalogu which of the items set out therein were of foreig manufacture. This was an alleged infringement o the Merchandise Marks Act, 1926, which has, b successive Orders in Council, been applied to variou articles. Part IV. of the large Merchandise Mark (Imported Goods) No. 4 Order, 1928, made two year ago on the application of the Surgical Instrumen Manufacturers' Association, applied the Act t surgical, medical, dental, and veterinary instru ments made wholly or mainly of metal and to al surgical, medical, dental, and veterinary appliances except artificial eyes. Evidence was offered that a Mayo's needle holder, selected by reference to the catalogue, had been ordered from the defendant company, that there was no description of the origin of articles in the catalogue, and that the article actually supplied was of foreign origin. There was similar evidence of the ordering of another article from the catalogue; the article supplied proved to be of German origin and the purchaser sent it back with an inquiry whether it was of British or foreign manufacture; it was then returned with a small tab attached to it bearing the word "Foreign." The defence suggested that the order was on behalf of a medical practitioner who belonged to the Indian Medical Service, and that therefore the Act did not apply as the article was for dispatch and use abroad; but, as Section 2 of the Act is aimed at sale or exposure for sale in the United Kingdom, this was an unpromising loophole. As regards other articles, some were genuinely British, others were admittedly unmarked, and as to these the company pleaded guilty. The magistrate inflicted various fines with costs; he said the Act had been infringed and the company had pretended that the bulk of its goods were of British manufacture when in fact they were not.

The object of the Act is "to require an indication of origin to be given in the case of certain imported goods." Its supporters claim that this enables purchasers to "buy British" and thus promotes employment in this country. Its critics maintain that the "indication of origin" merely gives a gratuitous advertisement to a cheap or desirable foreign-made article. In the recent proceedings it appeared that the Mayo's needle holder was priced at 10*s.* 6*d.*, at which price it could not possibly be British made, and that the price for the same article, if made in Britain, would be not less than a guinea. This raises a political issue on which the magistrate was careful not to express an opinion.

AN ITALIAN CONFERENCE ON CANCER.—The Lega Italiana per la Lotta contro il Cancro is holding its second national congress at Bologna on Jan. 4th and 5th, 1931. The congress will coincide with the opening of a centre for the study and treatment of cancer. The secretary may be addressed at the Clinica Medica, Policlinico S. Orsola, Bologna.

SPECIAL ARTICLES

THE CHEMISTRY OF MUSCULAR CONTRACTION.*

By Prof. Otto Meyerhof, LL.D.,

DIRECTOR OF THE PHYSIOLOGICAL INSTITUTE (KAISER WILHELM INSTITUT FÜR MEDIZINISCHE FORSCHUNG) AT HEIDELBERG.

To begin with I must review briefly the chemical processes involved in the performance of work by a muscle. The following description might be given of the course of events involved in a muscular twitch.

Coincident with contraction lactic acid is formed from glycogen, giving rise to about 385 calories of heat per gramme of lactic acid. With oxidative recovery the lactic acid disappears. It is not all burned, but a coupled reaction occurs in which a proportion, generally four-fifths, is resynthesised, the remainder being oxidised. Possibly none is oxidised, but an amount of carbohydrate equivalent to one-fifth of the lactic acid is burnt, while all the lactic acid becomes glycogen. It is, therefore, safer to speak of the ratio of the total lactic acid removed to the lactic acid equivalent oxidised. This figure I have called the "oxidative quotient." According to measurements made in my laboratory, the heat of combustion of glycogen (referred to one gramme of the hydrate in aqueous solution) is 3782 calories. One-fifth of this value (757 calories) is the amount of heat we should expect to accompany the production and oxidative removal 1·0 g. of lactic acid. Since the production alone accounts for 385 calories, the remaining 372 calories are to be looked for in the recovery phase. Thus the heat of recovery should be approximately the same as the heat of activity, a result which was arrived at by A. V. Hill several years ago.

This oxidative quotient is a figure of general significance in muscle metabolism and is not limited to the process of recovery after fatigue. For instance, a muscle resting in nitrogen produces lactic acid steadily; in oxygen no lactic acid accumulates. The lactic acid formed per hour in the absence of oxygen is, however, three or four times as great as could be burned by the oxygen which would have been used in the same time in aerobic conditions. Thus it is evident that a continuous cycle of reactions takes place, resting metabolism giving rise to three or four molecules of lactic acid which are continuously reconverted by respiration, while one equivalent of lactic acid is burned. The lactic acid which accumulates in the resting anaerobiosis is found to disappear subsequently in oxygen according to the same oxidative quotient. While this conformity suggests that we have here a correct interpretation of Hill's myothermic data in terms of chemical reactions, nevertheless recently discovered facts are forcing us to modify some essential details. In the first place, we have to abandon the idea that lactic acid itself plays a rôle in the mechanism of contraction, an idea which—although never considered a coercive conclusion of the thermodynamics of contraction—has nevertheless been a great favourite.

The Part Played by Phosphagen.

We are entering a hypothetical field if we proceed from purely thermodynamic considerations to a more definite representation of the physical and chemical processes involved in activity. Nevertheless, I should like to venture this step here, because it enables me to discuss some phenomena of great interest, although the part which they play in the mechanism of contraction is somewhat obscure. Difficulties are met at the beginning in attempting to explain the 385 calories of heat produced per gramme of lactic acid formed in the muscle (the so-called caloric quotient), because the difference between the heats of combustion of dissolved glycogen and dissolved lactic acid is only 180 calories. Part of the lactic acid is neutralised by the proteins of the muscle, liberating 140 calories per gramme of lactic acid thus neutralised; but part is neutralised by the phosphate and bicarbonate—a reaction only slightly exothermic—so that not more than 100 calories on the average may be attributed to the neutralisation process. This value may be reached by direct experiments in which acids such as valerianic are allowed to diffuse into a muscle. In such cases about 10,000 calories of heat have been observed per gramme-molecule. A similar figure of 9400 calories has recently been obtained by Dr. Stella (in Prof. Hill's laboratory) for the heat of neutralisation of carbonic acid allowed to diffuse into a muscle. Thus, if we include the cleavage heat of glycogen, about 280 calories would be accounted for, leaving the origin of the remaining 100 calories unknown.

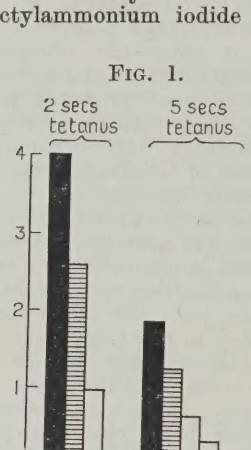
Now there is in fact another reaction known to occur simultaneously which, in vitro, produces about the required heat. Although it is still a matter of dispute whether the heat is liberated to its full amount in the living muscle, I cannot avoid discussing further this interesting possibility. Early in 1927 the Eggletons published the discovery that the greater part of the "inorganic" phosphate of resting muscles was actually present in the form of an unstable compound which they called phosphagen and which is split under the influence of muscular activity, while it is resynthesised during oxidative recovery. This compound was shown by Fiske and Subbarow to consist of phosphate and creatine. In coöperation with Dr. Lohmann, Dr. Nachmansohn, and lately Dr. Lipmann and Dr. Lundsgaard, I have thoroughly investigated the behaviour of this compound chemically and physiologically. For different kinds of activity and under different conditions the amount of phosphoric acid derived from phosphagen may be compared with the simultaneously produced lactic acid. In the course of anaerobic fatigue this quotient rapidly decreases from an initial value of three or four down to far below one, and even to zero—that is, in extreme fatigue hardly any creatine-phosphoric acid is split at all while the lactic acid production is still more or less proportional to the muscular tension produced. Moreover, this quotient is strongly affected even in fresh muscles by different influences—e.g., it is low from the beginning in curarised muscles and after nerve degeneration. If curarisation is effected by quaternary ammonium bases, the quotient may fall to as low as one-eighth of the normal value.

It is found, in fact, that the extent of phosphagen breakdown varies in strict parallelism with the speed of the excitation processes, and not only under the influence of curare and of nerve degeneration, but also in normal muscles at different temperatures and in different states of fatigue. Thus at 8° C. both speed of

* Abstract of a series of four lectures given at University College, London, in March, 1930.

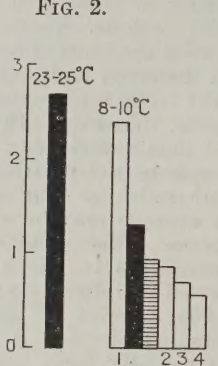
excitation and relative phosphagen breakdown have half the value characteristic of 24° C.; in a similar manner the slow muscles of the toad differ from the rapid muscles of the frog. Figs. 1 and 2 may help to demonstrate the change in phosphagen breakdown relative to lactic acid production. The restricted decomposition very noticeable in the case of trimethyl-octylammonium iodide corresponds to an equally

FIG. 1.



The phosphate production, relative to the lactate production, accompanying tetanic contractions, in various kinds of muscle at room temperature. 1. Normal frog. 2. Normal toad. 3. Curare. 4. Degeneration of nerves. 5. Trimethyl-salt.

FIG. 2.



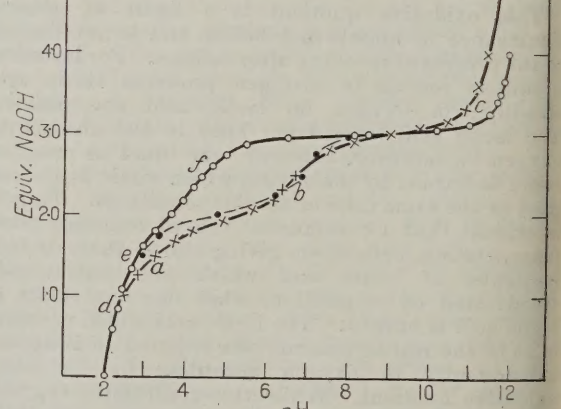
The phosphate production, relative to the lactate production produced by a series of twitches. 1. Veratrine. 2. Curare. 3. Degeneration of nerves. 4. Trimethyl-salt.

strong reduction in the speed of excitation (the chronaxy is 30 times longer than normal). But the breakdown was determined in these cases by estimations before and after activity. A detailed investigation of the time course of the reaction, however, shows that at the height of prolonged contraction much more phosphagen is split, about one-third of the quantity decomposed undergoing anaerobic restitution in the 20 seconds following relaxation. Moreover, the absolute quantity thus restored is nearly the same in cases where there is a considerable restriction of the total decomposition. During each single contraction, therefore, more phosphagen is split than can be accounted for by the final determination; indeed, with far-advanced fatigue the breakdown is almost entirely reversed anaerobically, a fact which seems to be of very essential importance.

As mentioned before, the hydrolysis of creatine-phosphoric acid is an exothermic reaction, yielding about 120 calories per gramme of phosphoric acid liberated. In 1927, in a paper read before a meeting of the British Medical Association, I voiced the opinion that this heat approximately covered the shortcoming in the caloric quotient. Later on, however, doubts arose as to the reality of the "breakdown" and "resynthesis" of phosphagen in the living muscle. I cannot now go further into these difficulties, which are chiefly connected with the anaerobic resynthesis, but I should like to describe two series of experiments carried out in my laboratory and not yet published which leave us in no doubt that the hydrolysis of creatine-phosphoric acid occurs in muscle just as in vitro and that it is of the utmost importance in the contraction mechanism.

The first series of experiments, which I made in collaboration with Dr. Lipmann, shows in a striking manner the reality of the hydrolysis. This hydrolysis, if carried out at a reaction only slightly acid, leads t the production of basic equivalents, because th guanidine group of creatine is very much stronge than the third valency of the phosphoric acid liberate at the same time (Fig. 3). At pH 6 the change i so marked that the hydrolysis of one molecul produces nearly one basic equivalent. At pH 7 th effect is considerably less, and at pH 8 it is vanishingl small. This liberation of base enables us to demon strate the hydrolysis of phosphagen in a living muscl suspended in an atmosphere of nitrogen and carbo dioxide. In such a case, when bases are formed th muscle takes up carbon dioxide from the gas around and when acids are formed carbon dioxide is expelled These changes can be followed by measurements o the partial pressure of carbon dioxide in th surrounding gas, and we find that when breakdow of phosphagen occurs, carbon dioxide is, in fact, take up by the muscle and the more so the nearer it is t pH 6—i.e., in a pure atmosphere of carbon dioxide At this reaction, moreover, the hydrolysis of creatine phosphoric acid is accelerated and lactic aci production checked. If the degree of alkalisation i determined from the uptake of carbon dioxide b means of the Henderson-Hasselbalch equation, it i found to be in conformity with the measured cleavag of creatine-phosphoric acid, after allowing for th lactic acid formation. Fig. 4 shows a curve of thi nature, in which the uptake of carbon dioxide i plotted downwards and the output upwards from th base line. The peculiar result is observed that th muscle under higher pressures of carbon dioxid actually grows more alkaline during the first hundre or two hundred twitches. It is clear that as long a the reaction of the muscle is displaced towards th alkaline side or remains unchanged; after activity, heat of de-ionisation of protein cannot appear. Fo

FIG. 3.



The titration curves of creatine-phosphoric acid, before (*d*, *e*, *f*) and after (*a*, *b*, *c*) hydrolysis.

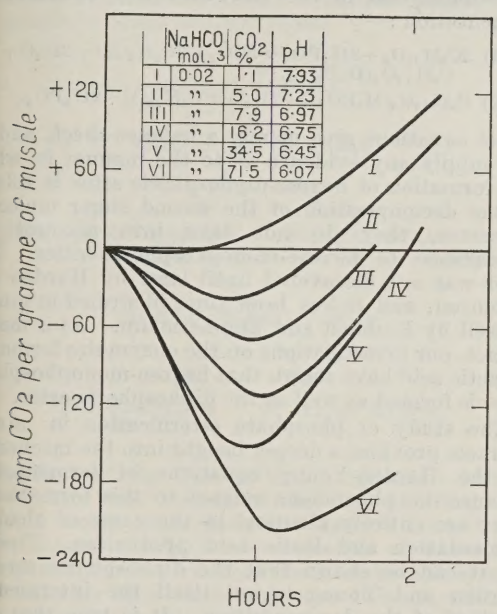
the present I should like to assume that in the earlier stages of fatigue the heat of hydrolysis of creatine-phosphoric acid acts, so to speak, as a substitute, whilst the heat of de-ionisation of protein gains prevalence in the later stages. Just this gradual substitution of one reaction by another may have the consequence that the heat appearing per unit of lactic acid formed will remain approximately constant or decrease very slightly with increasing fatigue. It seems that the changing of pH in the course of

contractions is not an essential part of the mechanism, but the breakdown of phosphagen is, nevertheless, of primary importance, as is shown by the recent experiments of Lundsgaard in my laboratory.

These experiments, perhaps even more convincing and exciting than those just considered, are leading to the following conclusions: 1. The formation of lactic acid during activity is a process only indirectly connected with the mechanism of contraction. 2. The hydrolysis of creatine-phosphoric acid has an importance as an energy-producing reaction equal to the formation of lactic acid.

According to Dr. Lundsgaard's communication published from Copenhagen, muscles poisoned with iodoacetic acid can perform a series of contractions without giving rise to any lactic acid, whereas phosphagen is broken down at an enhanced rate.

FIG. 4.

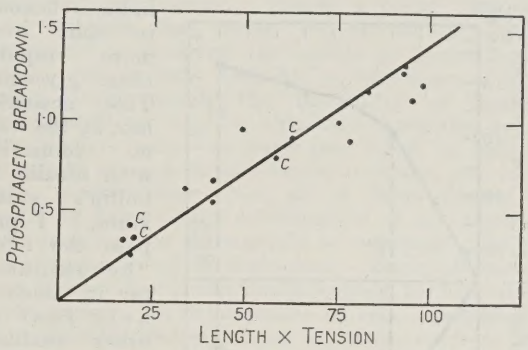


ıe uptake and discharge of CO_2 by muscles suspended in CO_2–N_2 mixtures and stimulated three times per minute. In all cases the muscle tends first to become alkaline.

Then the phosphagen is used up the muscle goes into gor. The quantitative investigations have been rried out by Dr. Lundsgaard in my laboratory at eidelberg, and I should like now to quote some facts hich have been proved in the meantime.

With an adequate degree of poisoning a frog muscle eighing about 1·0 g. can develop, under strictly aerobic conditions, about 30 kg. of tension in a ries of twitches (i.e., about one-quarter of the rmal performance) without giving rise to any lactic id. The phosphagen breakdown is strictly proporonal to the work performed. Taken as a whole, e inorganic phosphate is not increased in amount, y phosphate liberated being afterwards esterified the Harden-Young hexose-diphosphate. In point fact the heat of hydrolysis of phosphagen is just fficient to account for the energy liberated by the uscle because, per unit of tension, three or four times many mols of phosphagen are decomposed as ctic acid would otherwise be formed. According to e foregoing figures the heat per unit of tension ngth would, therefore, have the usual value. The proximate constancy of the isometric coefficient phosphagen in these muscles, and the agreement with the values determined for the heat of hydrolysis, may be seen in Fig. 5. The tension developed is plotted along the abscissa, and phosphate liberated per gramme of muscle along the ordinate. The continuous line is calculated from lactic acid experiments for the same amount of energy and tension. It must remain an open question whether the phosphagen breakdown and lactic acid formation in

FIG. 5.



Showing the strict proportionality between energy liberation and phosphagen breakdown in muscles poisoned with iodoacetic acid and stimulated with a series of single shocks (isometric contractions). c = Curare.

normal muscles must be dealt with as two completely separate energy-producing processes, or—as I am rather led to believe—the lactic acid formation supplies the energy for a continuous resynthesis of phosphagen at the moment of contraction. Indeed, Dr. Lundsgaard's experiments show that in a muscle poisoned with iodoacetic acid there is no anaerobic resynthesis and that the amount of energy produced, or work done, is unequivocally determined by the amount of phosphagen breakdown. The results of these experiments warn us that we must not be too rash in employing the chemical processes so far known to us for building up a theory of muscular contraction.

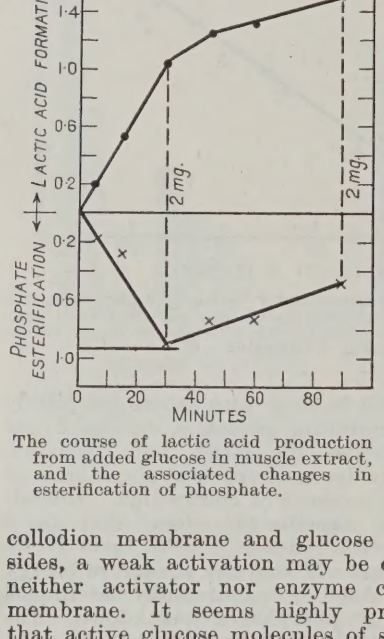
Study of the Lactic Acid-forming System in Vitro.

I should like to recall the enormous importance which Buchner's separation of zymase from yeast cell had for the chemistry of fermentation. I was able to show a few years ago that we may even succeed in isolating the lactic acid-forming system from muscle and setting it to work in a homogeneous solution. This system may be separated into its components, and the isolated enzyme may then be concentrated to a considerable degree and freed from accompanying substances by Willstätter's adsorption methods—particularly adsorption on aluminium hydroxide and elution by phosphate. By proceeding in the proper way extracts of muscles are obtained free not only from all structural constituents but also from carbohydrate. They are rich in enzyme, so the behaviour of various added carbohydrates, as well as the different phases of the acid production, may be studied separately and in detail. It is a further advantage of the study of lactic acid formed in solution that we are not limited to wearisome chemical determinations, but may effect the measurement of the lactic acid by means of the exact and comfortable manometric methods of Warburg.

It is a striking fact that glycogen, starch, and their various polysaccharidic hydrolysis derivatives, such as amylose, amylopectin, and the so-called hexosanes, are

all converted into lactic acid by the muscle extract with equal facility and speed. On the other hand, the hexoses are attacked very slowly if at all. An activator may be obtained by autolysing yeast and precipitating the yeast extract with 50 per cent. alcohol. The addition of this activator to a muscle extract allows the fermentable hexoses to be glycolysed with great rapidity. By itself this activator can do nothing, but its addition to the muscle extract induces hexoses to split even more rapidly than glycogen. This activator has, by the way, no connexion with insulin or Collip's glucokinin. I propose the name "hexokinase" for it, since it acts just as other auxiliary enzymes designated as kinases. We know very little about the mechanism of this activation. If the enzyme is separated from the activator by a collodion membrane and glucose is added to both sides, a weak activation may be observed, although neither activator nor enzyme can penetrate the membrane. It seems highly probable, therefore, that active glucose molecules of short existence are formed and react with the enzyme. At any rate the transformation of ordinary glucose into such an active form does not depend on the structure of the cell, for the yeast activator as well as the muscle extract are structureless. In a concentrated aqueous extract of rabbit muscle a slow lactic acid production from glucose takes place, even without the addition of an activator. In a recent paper, McCullagh and Case, of Hopkins's laboratory, mentioned that they could effect the splitting of glucose only with suspensions of mammalian tissues, not with tissue extracts free from cells. Personally I am inclined to think that it depends upon special technical conditions whether or not the factor which activates hexoses may be separated from the structure of the cell.

FIG. 6.



The course of lactic acid production from added glucose in muscle extract, and the associated changes in esterification of phosphate.

Fig. 6, taken from a series of experiments carried out some years ago, shows the change which a certain quantity of glucose added to an extract undergoes in the presence of hexokinase. The lactic acid formed is plotted upwards and the phosphate esterified is plotted downwards; both are shown on the same scale. It is apparent that the lactic acid is formed at the beginning at a very considerable rate, while simultaneously phosphate is esterified. Within 30 minutes the whole 2 mg. of glucose added are consumed, partly by formation of lactic acid and partly by esterification with phosphate. As the symmetry of the initial parts of both curves shows, the esterification of phosphate is approximately equimolecular with the lactic acid production. When, however, all the sugar is used up, a slow period follows in which the formation of lactic acid is accompanied by a reappearance of phosphate. Direct analyses sho that hexose-mono- and diphosphoric esters ar formed during the first period and broken dow during the second. Since the rapid period lasts a long as sugar and phosphate are available, the yiel of lactic acid in this period is determined in th presence of excess of sugar by the amount of phosphat available. Before approaching an interpretation c these phenomena I would first point out the complet analogy existing between these two phases of enzymati formation of lactic acid and the time course o alcoholic fermentation by yeast extracts. Here, too according to the fundamental discovery of Harde and Young, the same two phases are observable a rapid fermentation phase during which phosphat is esterified to an extent proportional to the productio of carbon dioxide; then a slow phase which i characterised by the fermentation of the hexos esters formed during the first phase. These fact are summarised in the Harden-Young equations c fermentation:—

(1) $2C_6H_{12}O_6+2H_3PO_4 \rightarrow 2CO_2+2C_2H_5OH+2H_2O+C_6H_{10}O_4(H_2PO_4)_2$.

(2) $C_6H_{10}O_4(H_2PO_4)_2+2H_2O \rightarrow C_6H_{12}O_6+2H_3PO_4$.

These equations give merely a balance-sheet, and d not supply any evidence as to the manner in whic the formation of hexose-diphosphoric ester is relate to the decomposition of the second sugar molecul Moreover, they do not take into account th appearance of hexose-monophosphoric ester. Thi ester was not discovered until later by Harden an Robinson, and it has been since identified in musc as well by Embden and Zimmermann. As a matte of fact, our investigations on the enzymatic formatio of lactic acid have shown that hexose-monophosphori ester is formed as well as the diphosphoric ester.

The study of phosphate esterification in musc extracts provides a deeper insight into the mechanis of the Harden-Young equations of fermentatio because the phenomena related to this formation c ester are entirely identical in the cases of alcoholi fermentation and lactic acid production. First c all, it can be shown that the diphosphoric ester c Harden and Young is not itself the intermediar product of the decomposition. It is true that it i attacked even by such enzyme solutions as ar incapable of decomposing hexoses or polysaccharide —e.g., by stale enzyme solutions or such as have bee heated to 38°. But while the ability to fermen hexose-diphosphoric ester is more permanent than th ability to split pure carbohydrates yet the rate c fermentation is much less. It may, in fact, be show in various ways that an unstable ester arises as a intermediary product of carbohydrate cleavag This ester is partly decomposed and partly changed t the Harden-Young ester—a process of stabilisatio But the unstable ester is a hexose-monophosphori ester. We believe this because the biological hexos monophosphoric esters behave in quite a differen way from the diphosphoric esters in enzymati cleavage. The diphosphoric ester is relatively slowl transformed, and gives rise to equimolecular quantitie of lactate and phosphate. The monophosphori esters, on the other hand, are decomposed ver rapidly at first; exactly as rapidly as sugar. At th same time there is no formation of phosphate; on th contrary, there is a disappearance of inorgani phosphate from the solution. Part of the est decomposes into lactic acid and part takes up th liberated phosphate—and more besides—and becom hexose-diphosphoric ester. When all the mon phosphoric ester is used up, the rate of lactic aci

formation falls off, and now the liberation of lactic acid is accompanied by equimolecular quantities of phosphate.

The Harden-Young Equations Applied to Muscle Extract and Yeast.

It can be proved by the addition of fluoride to this system that as a matter of fact hexose-monophosphoric ester is transformed directly into hexose-diphosphoric ester. To be sure, the diphosphoric ester appearing here is not the Harden-Young ester; to that question I shall return later. This observation, as well as a series of others, is leading plainly to the conclusion that hexose-monophosphoric ester is the intermediate body in the carbohydrate cleavage, and we must regard the Robison ester as the first step from the actual intermediate towards stabilisation. The true intermediate cannot accumulate because of its instability. Provided with this knowledge, we can formulate the Harden-Young equations afresh, both for muscle extract and for yeast.

$$\underset{\text{A}}{2C_6H_{12}O_6+2H_3PO_4}$$

$$\downarrow$$

$$2C_6H_{11}O_5(H_2PO_4)+2H_2O$$

$$\swarrow \qquad \searrow$$

$$2CO_2+2H_2O+2C_2H_5OH+C_6H_{10}O_4(H_2PO_4)_2 \qquad 2C_3H_6O_3+2H_2O+C_6H_{10}O_4(H_2PO_4)_2$$

$$\underset{\text{B}}{2C_6H_{10}O_4(H_2PO_4)_2+2H_2O}$$

$$\swarrow \qquad \searrow$$

$$2CO_2+2C_2H_5OH+2H_3PO_4 \qquad 2C_3H_6O_3+2H_3PO_4$$

The first of the Harden-Young equations is here vided into two stages, in the first of which the stable hexose-monophosphoric ester is formed and the second of which two molecules of it react in ch a manner that one becomes a diphosphoric ester d the other forms two molecules of lactic acid. I ve not so far mentioned that the analogy between tic acid formation in muscle and the alcoholic mentation is also demonstrated by the fact that e dialysable, thermostable co-enzymes necessary the two processes are interchangeable. They ve the same chemical properties, so far as these ve been investigated. Although we do not know t the exact part played by this co-enzyme, it is obably required for the esterification process licated in the first equation of fermentation. It d already been proved by Harden that the hydrolysis hexose-diphosphoric ester does not require the sence of the co-enzyme. According to the view Harden and Young the hydrolysis of hexose-hosphoric ester must precede the fermentation of hexose, the latter being esterified again in accord-e with the first equation. It has been shown, wever, that hexose-diphosphoric ester can be mented in solutions extremely poor in co-enzyme, l it can be converted into lactic acid by muscle racts incapable of glycolysing sugar or glycogen uted extracts or extracts which have been heated 37°). It seems, therefore, that the diphosphoric er must be fermented direct without any previous drolysis, and this fact is expressed in the modified nd equation above. Without doubt the drolysis assumed by Harden and Young takes ce, but I regard it rather as a side reaction.

Objections have recently been made by members of Harden's laboratory to this modification of Harden's equation. It is claimed that hexose-monophosphoric ester must be considered as an intermediate product not only of the formation of the diphosphoric ester but also of its decomposition. This is surely true; I believe that the modified equations only represent a kind of ideal case, freed from the disturbances of accessory reactions. In fermentations by dry yeast further complications are added, such as the formation of the trehalose-monophosphoric ester recently discovered by Robison. Taking a broad view, we must suppose that sugar, by esterification with phosphate, is rendered susceptible to fermentative attack, and is thus brought to decompose. In a certain configuration the instability of hexose-monophosphoric ester is obviously especially great. This reactive ester—or such part of it as escapes immediate decomposition—tends to change into more stable modifications. Not all of these appear in the living muscle; the coördination of esterification and breakdown is presumably so complete that we find always one and the same ester. This coördination must be imperfect in the muscle extract, for here other esters appear. In consequence of this coördination, no measurable decomposition of hexose ester occurs in a muscle as a result of activity when a large quantity of lactic acid is suddenly formed. On the contrary, a temporary increase of hexose-monophosphoric ester is more likely to be observed in such conditions, perhaps because the esterification process is somewhat faster than the glycolysis. Precisely on account of this excellent coördination of the separate reaction phases, the actual chemistry of the reaction cannot be recognised in living muscle, but only in the separated enzyme solution.

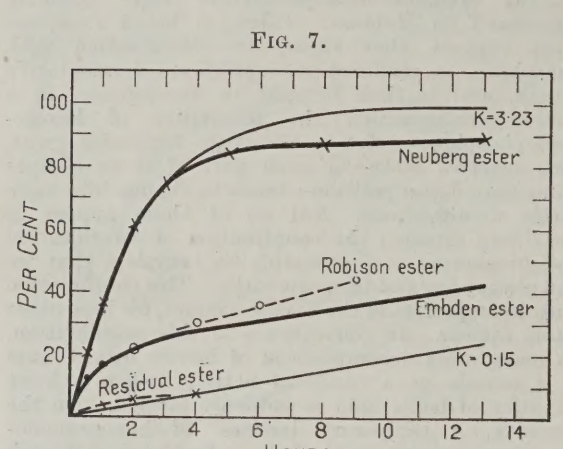
Further similarities between the glycolytic function of muscle and the fermentative function of yeast are revealed by the similar action of certain chemical substances on the two processes. For example, Harden showed that arsenates strongly accelerate fermentation in extracts of yeast on account of quicker splitting of the hexose-diphosphoric ester. Various experiments in my laboratory have convinced me that this is the only way in which arsenates accelerate fermentation in widely differing circumstances. For instance, the fermentation of glycogen proceeds at a three- or a four-fold rate in the presence of arsenate, because in the fermentation of glycogen in the absence of arsenate three or four hexose-phosphoric ester molecules would accumulate per molecule of hexose fermented. In muscle extract arsenate has exactly the same effect. From these and other analogies we must conclude that esterification with phosphate is the common initial stage of both the alcoholic fermentation and the formation of lactic acid and, moreover, that the same three-carbon compound is most probably the next stage in the decomposition. According to Neuberg's and Dakin's theories this product may be methylglyoxal; most tissues contain an enzyme capable of converting methylglyoxal into lactic acid. These theories have been recently confirmed by Ariyama, who obtained methylglyoxal from hexose-phosphoric ester by means of tissue extracts. Neuberg has observed a similar action of dry yeast preparations. But from this point onwards there must obviously be a separation in the courses followed by the yeast enzyme system and the muscle enzyme system. Whatever may be the differences in detail, there is a surprising similarity between the two kinds of anaerobic carbohydrate katabolism in cells so different as those of a facultatively anaerobic micro-organism

and those of the muscles of the higher animals. This agreement leaves no doubt that the metabolic processes, for all their striking variety, are based on definite and uniform biochemical laws.

The Phosphoric Esters of Muscle.

The physiologist Embden, of Frankfurt, assumed that of the acid-soluble phosphate in muscle only one compound took a share in the formation of lactic acid. He designated it "lactacidogen." It was believed to

FIG. 7.



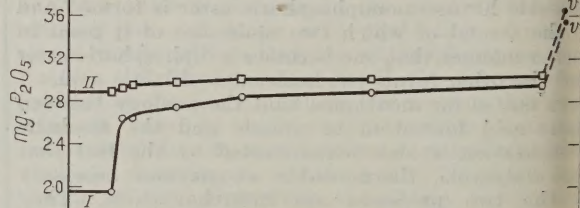
The hydrolysis of certain hexose-phosphoric esters in normal hydrochloric acid solution at 100° C. Such curves reveal the composite nature of some of the natural esters.

be closely related to, or even identical with, the Harden-Young hexose-diphosphoric ester of fermentation, but in muscle it was said to split into equimolecular amounts of lactate and phosphate. In the place of this one phosphoric ester we have now three separate groups of compounds playing different parts in the metabolism of activity. Their only point of comparison lies in the fact that from them all orthophosphate may be liberated enzymatically. In only one respect is the older conception justified: it is that we must consider a hexose-phosphoric ester to be the intermediate product in the formation of lactic acid from glycogen.

We will begin by considering this group of hexose-phosphoric esters. All of them can arise in, and can be fermented in, either yeast-press juice or muscle extract. A very simple method serves for the distinction of the known hexose-phosphoric esters and for the detection of new ones, a method which K. Lohmann has worked out in my laboratory. The rate of hydrolytic liberation of phosphate in a protein-free solution at 100° C. in the presence of normal hydrochloric acid is measured. In the case of a single pure ester the curve obtained is that of a monomolecular reaction with a certain characteristic constant. The course of such an acid hydrolysis is shown in Fig. 7 for the hexose-phosphoric esters already known; the upper heavily traced curve refers to the Neuberg ester obtained by the partial hydrolysis of the Harden-Young diphosphoric ester. In this case there is at first a very rapid hydrolysis, and when 80 per cent. of the phosphate present has been split up there is a sudden decrease in the rate. When the velocity constants of this hydrolysis are calculated, two values are obtained, one of which is applicable to the first 75 per cent. and the other—20 times smaller—is applicable to the last section of the curve. Robison's ester (from yeast extract) or Embden's ester (from fresh muscles) behave like the Neuberg ester only for the first 10 per cent. of the hydrolysis then the velocity constant changes to a value only one-tenth as large. It can be shown in numerous ways that these esters are mixtures, consisting mainly of two components. The more easily hydrolysed component is a ketose ester, the other contains aldose. The two components may be separated from each other, for example by hydrolysing the ketose ester and preparing the aldose ester from the more resistant residue. The lowest curve in Fig. 7 was obtained from the aldose component isolated in this way. It is seen to have a perfectly steady hydrolysis constant. Other methods of examination have all led to the same result—namely that the Embden ester and the Robison ester are made up of about four-fifths aldose and one-fifth ketose, whilst the Harden-Young ester, and the Neuberg ester obtained from it, contain four-fifths ketose and one-fifth aldose. Moreover, these esters have always the same composition and arise whether glucose or fructose is the initial body undergoing fermentation. Some time ago Robison and Morgan achieved a similar separation of the components of the Robison ester by fractional crystallisation of the brucine salt, whilst Pryde and Waters defined the aldose and ketose components of Embden's ester in the same way as we did. The kinetics of breakdown of these esters by the lactic acid-forming enzyme are completely alike, a fact which points to close relationship or to the ease with which each of them may be converted into the other.

The hydrolytic method, however, not only permits a characterisation of the known esters and their distinction without chemical methods of separation; it also leads to the discovery of new esters. These newly found esters appear as intermediate products not only in the transformation of genuine carbohydrate

FIG. 8.



The hydrolysis of the complex phosphates of muscle by N HCl at 100°. Curve I, fresh muscle extract. Curve II, autolysed muscle extract. The rapidly hydrolysing component present in the fresh extract is pyrophosphate.

but also as products of the esters already known. They may accumulate if glycolysis is inhibited in certain ways—e.g., by means of fluoride. Embden was the first to recognise that when fluoride is added to minced muscle an accumulation of hexose-phosphoric ester—which he thought to be the Harden-Young ester—takes place, while the formation of lactic acid is inhibited. The investigations by means of the hydrolysis method carried out by Dr. Lohmann demonstrate that, while some Harden-Young ester is formed, the main product is a hexose-diphosphoric ester of entirely different characteristics. Its hydrolysis constant is 20 times smaller, and its salts are much more soluble. This "fluoride ester," as we may provisionally call it, arises not only in the

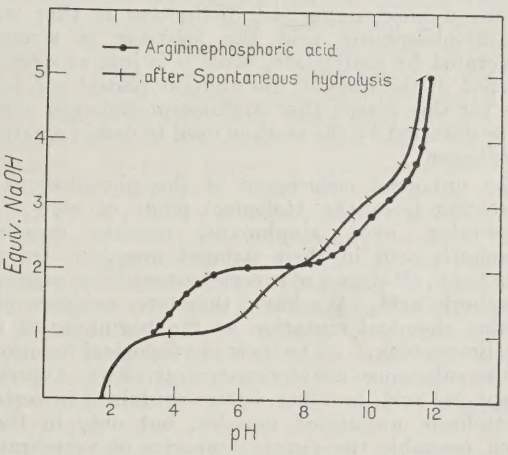
transformation of free carbohydrate but also in the transformation of the Harden-Young ester, in the presence of fluoride.

Pyrophosphate of Muscle and its Hydrolysis.

All these compounds are, from a purely biological point of view, only of secondary interest, for they appear with such variety only in aqueous extracts of cells, not in the living muscle itself. It is quite different, however, with the next phosphorus fraction we shall consider. Embden described several years ago a method for the estimation of "lactacidogen" which consisted in measuring the increase in inorganic phosphate content which takes place in muscle tissue when incubated in the presence of bicarbonate at 42°. But Lohmann's investigations have shown that the overwhelming part of the phosphate liberated during this autolysis does not take its origin from a hexose-phosphoric ester and has no direct relationship with lactic acid formation. He found it to be derived from the pyrophosphate of the muscle by hydrolysis. If a trichloracetic acid filtrate of fresh muscle tissue is hydrolysed, a hydrolysis curve such as is shown in Fig. 8 (Curve 1) is obtained. In normal hydrochloric acid at 100° C. a certain fraction of the "organic" phosphate is hydrolysed to orthophosphate within seven minutes. If the acid hydrolysis is repeated with the filtrate of an autolysed minced muscle, a hydrolysis curve such as Curve 2 will be obtained. The rapidly splitting compound has disappeared whilst the orthophosphate starts at a correspondingly higher level. Now none of the hexose-phosphoric esters is liable to such rapid hydrolysis but pyrophosphate hydrolyses at just such a rate, and indeed pyrophosphate was successfully isolated in a pure state from fresh muscles.

It was found that all cells contained this pyrophosphate fraction but that the largest amounts are found in muscle and in yeast, which seems to indicate that the pyrophosphate may have some kind of share in the katabolism of carbohydrate. The pyrophosphate found in the muscle is not free but, as Dr. Lohmann's further investigations proved, is linked to adenylic acid. The latter is a derivative of nucleinic acid, and was discovered by Embden in muscles and proved by him and by Parnas to be the source of the ammonia which is set free in a muscle during activity. This adenylic-pyrophosphoric acid plays an unexpected rôle in the formation of lactic acid in muscle. Muscle and yeast cells contain the same co-enzyme, which takes the same share in alcoholic fermentation as in lactic acid formation. The lactic acid-forming enzyme in its purest form is able to produce lactic acid from added carbohydrate when phosphate and boiled muscle juice (co-enzyme solution) are added. If, however, the boiled muscle juice is made from a stale extract, it turns out to be unfit for the activation of the purified enzyme solutions. Its activity is restored if a certain fraction from the barium precipitate of a muscle extract is added. Adenyl-pyrophosphoric acid is the effective substance in the barium precipitate. During autolysis of muscle as well as during incubation of fresh muscle extract this nucleotide is decomposed, the pyrophosphate group being split off and ammonia lost, leaving inosinic acid (hypoxanthine-ribose-phosphoric acid). An autolysed co-enzyme solution becomes effective again by adding pure adenyl-pyrophosphoric acid which has been obtained from fresh muscle extract. We must, therefore, consider adenyl-pyrophosphoric acid as a member in the chain of substances necessary for lactic acid production or alcoholic fermentation, since the above experiments can be repeated with the same result by using well-washed dry yeast. The nucleotide compound becomes effective in the co-enzyme system only together with a second constituent; we may, therefore, consider it the complement of co-zymase. Now it was found that adenylic acid itself shows this complementary activity, and the explanation of this fact is very interesting. Lehnartz, in Embden's laboratory, described an increase in pyrophosphate in muscle-press juice when adenylic acid was added, and we then realised that adenyl-pyrophosphate was synthesised from adenylic acid in the presence of orthophosphate by means of enzyme extract of muscle. This peculiar synthesis goes on extremely fast for a couple of minutes after the adenylic acid has been added. Here we have an explanation of Euler's observation that pure co-enzyme preparations, if they were effective, always contained adenylic acid.

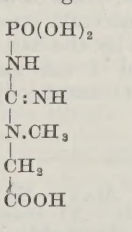
FIG. 9.



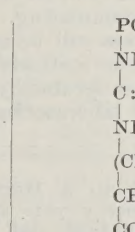
The titration curve of arginine-phosphoric acid before and after hydrolysis.

Creatine- and Arginine-phosphoric Acids.

Finally, I have to say something about the third phosphate fraction in muscle, the "phosphagen," which until 1927 was determined as part of the inorganic phosphate of the muscle. The Eggletons found phosphagen (creatine-phosphoric acid) in vertebrate muscles only; the muscles of invertebrates, which are almost entirely lacking in creatine, were naturally found to contain no creatine-phosphoric acid. The considerable importance of creatine-phosphoric acid being proved, we looked for its substitute in similarly acting muscles of invertebrates; this substitute we discovered to be arginine-phosphoric acid. Chemical investigation of both compounds revealed analogous structures.



Creatine-phosphoric acid.



Arginine-phosphoric acid.

That the guanidine group is bound directly to the phosphoric acid (i.e., that we are dealing with a

substituted amino-phosphoric acid) is shown by the similar behaviour of amino-phosphoric acid ($NH_2PO(OH)_2$) when submitted to acid hydrolysis. For the arginine compound this conclusion may also be drawn from the fact that the α-amino group remains free. Moreover, it follows from the electro-titration curves shown in Figs. 3 and 9. It will be seen that in both cases, when hydrolysis takes place in faintly acid solution (about pH 6), a free basic equivalent arises, because the strong guanidine group is liberated together with the very weak third valency of phosphoric acid. In spite of the great similarity of the two natural phosphagens, they show differences in chemical properties. For methodical reasons a most important distinction is that with creatine-phosphoric acid the splitting is strongly accelerated by molybdate, while it is just as strongly retarded in the case of the arginine-phosphoric acid. It is for this reason that arginine-phosphagen could not be detected by the method used to detect creatine-phosphagen.

The universal occurrence of the phosphagens is interesting from the biological point of view. All vertebrates, even amphioxus, contain creatine-phosphoric acid in their striated muscles. On the other hand, all classes of invertebrates utilise arginine-phosphoric acid. We have, therefore, evidence of a genuine chemical mutation at the beginning of the vertebrate stock. As to their physiological functions, the two substances are obviously equivalent. Arginine-phosphoric acid, however, is also contained in certain invertebrate unstriated muscles, but only in those which resemble the striated muscles of vertebrates, such as the longitudinal muscles of holothuria and the pharynx retractor of sipunculus, while it is absent, for instance, in the mantle muscles of the octopus. It is contained in the striated part of the muscle of pecten but not in the white, the so-called tonus, muscles. There it is obviously connected with the relatively rapid functions of the striated muscles. Indeed, it is decomposed with quite different degrees of facility according to the speed of response of the respective muscles; for instance, it is decomposed very fast in the rapid pecten muscles but only very slowly in the muscles of holothuria. Since the heat of hydrolysis of arginine-phosphoric acid is about the same as that of its creatine analogue, we may assume that it plays the same important rôle in the transformation of energy.

Although it is not possible here to give more than a limited section of the newly discovered facts concerning the acid-soluble organic phosphates in muscle, it is clear that much knowledge has been gained about them in the last few years. This knowledge is not sufficient yet to form a satisfying and coherent description of the chemistry of muscular activity, but we may confidently hope that in a few more years a working hypothesis will emerge and bring some degree of order into the mass of new facts which we are accumulating. I entertain great hopes that much progress will be made by the use of Prof. Hill's myothermic methods, and I am sure that progress will be accelerated by the pleasant coöperation between our two laboratories.

PRESENTATION TO A MEDICAL MAN.—Mr. Frank Barnes, who retired a year ago after 27 years' active service on the medical staff of Birmingham General Hospital, was recently presented with an illuminated address, and the hospital with his portrait. Mr. Barnes has been successively resident surgical officer, surgical casualty officer, assistant surgeon, honorary surgeon, and a member of the board.

THE TERCENTENARY OF QUININE.

RECEPTIONS AT THE WELLCOME HISTORICAL MEDICAL MUSEUM.

THE three-hundredth anniversary of the first recognised use of cinchona by Europeans has been celebrated during the past fortnight at the Wellcome Historical Medical Museum by receptions and the inauguration of a special exhibition. On Dec. 8th Cardinal Bourne took the chair, and an address was given by the Marquis de Merry del Val, Spanish Ambassador. The French Ambassador, Mr. A. J. de Fleuriau, and the Envoy-Extraordinary for Peru, Señor Don A. Gonzalez-Prada, also spoke. In the evening the Netherlands Minister, H. E. Konkheer R. de Marees van Swinderen, presided, Archbishop Goodier, S.J., gave the address, and General C. G. Dawes, American Ambassador, and Prof. F. van der Wielen, of Amsterdam, also spoke.

On Dec. 10th Mr. H. S. Wellcome, LL.D., took the chair, and Sir David Prain gave an address on the

History of Cinchona Bark.

The trees exploited in the forests of Loja, now Southern Ecuador, had been first examined critically, he said, by members of the French scientific expedition, under M. de la Condamine, which had spent the period 1737–43 in the measurement of the arc of a meridian in South America. The botanist of the expedition had been Joseph de Jussieu. As the result of his observations, Linnaeus, in 1742, had been enabled to found the genus cinchona in honour of the lady alleged to have brought the bark to Europe. It had been said that the natives who collected the bark had not known of its medicinal properties, but had believed it to be wanted for tanning leather or dyeing cloth. Natives, however, were not always anxious to convey their knowledge to their neighbours. The Marquis de Merry del Val had expressed the opinion—long held by the speaker—that the Indians had been well aware of the virtues of the bark, and de Jussieu had said that Jesuits in Peru knew its value in 1600. In this case the tercentenary was being celebrated a generation too late. By whatever means the bark had reached Europe, it had been known in Rome in 1639, having been sent to a Jesuit who had been sent there from Spain, and in 1643 had become a cardinal. The Jesuits had distributed the bark free to the needy and charged a high price for it to the wealthy. From Italy it had found its way to the Low Countries and thence to England, where a fortunate apothecary, one Talbor, had cured Charles II. with it. He had thereby incured the enmity of the London practitioners of his day and persuaded politically minded persons to assert that Charles must be a Catholic or he would never have taken a bark recommended by a cardinal. Indeed, the name of "Jesuit's bark" had long stood in the way of its use in medicine. Talbor had subsequently cured Louis XIV., who had bought the secret for £2000 and made it public. It had found favour with the courtiers; Lafontaine had written a long poem in honour of "quinquina," and in 1681 Mme. de Sévigné had written that it would soon become the fashion to take the bark after every meal like tea or chocolate. Racine, in a letter to Boileau, had said he did not know the honest man who, if he had taken quinine without effect, would have the hardihood to say so.

The cinchona bark recognised in the London Pharmacopœia of 1677 was the "Crown bark" of Loja; red bark appeared a century later. The

exploitation of the forest product had led to gradual diminution of supply and increased cost of collection. In 1735 Ulloa had called attention to the fate likely to befall the trade unless measures of forest conservation were taken. By 1785 the red bark (*Cinchona succiruba*) had been in general use in Europe and had been considered as useful as *C. officinalis*, and by 1790 yellow bark from Bolivia had become popular. In 1792, Fée had urged South America to cultivate cinchona, but instead exploitation in New Grenada had been undertaken. With the exhaustion of grey and yellow barks the exploitation of Columbian barks set in, and at last cultivation had been started: by France in Algeria in 1849, by Holland in Java in 1854, and by England in Ceylon and South India in 1861. Many climatic difficulties were, however, encountered; the climate of India was suitable but the soil was less satisfactory. Moreover, there was a difference in the adaptability of particular kinds of cinchona to changed conditions: Columbian barks had not flourished in Asia; red and grey bark had accommodated themselves, even to the unsuitable soil and climate of the Himalayas, and yellow bark grew in Sikkim and Burma but not in Ceylon and South India. The alkaloid content of different barks also varied, and the cultivator had to pay attention to the selection of strains, and still more of particular kinds. From the economic standpoint the nature of the alkaloids was even more important than their total amount.

Sir David Prain then proceeded to a discussion of the value of the various alkaloids. A vote of thanks to him was proposed by Mr. J. Ramsbottom, who mentioned the historical material now on show at the Linnean Society's rooms, and referred to the work of Sir Hans Sloane in popularising the bark. Prof. E. J. Salisbury, seconding, paid a warm tribute to the work of Dr. Wellcome and others for their synthesising influence in an age when specialisation was causing workers in different branches to become further and further divided. Sir Reginald Wingate gave some reminiscences of the Sudan, and the work of the Wellcome laboratories there.

Sir John Rose Bradford took the chair on the evening of Dec. 10th when an address was given by Sir Humphry Rolleston, who reviewed the history of quinine with many interesting and erudite anecdotes.

Therapeutics of Cinchona.

About 30 alkaloids had been obtained, he said, from cinchona bark, and they were all general protoplasmic poisons. The crystallisable ones were quinine, cinchonidine, quinidine, and cinchonine. The most powerful antiseptic was quinine, followed in order by quinidine, cinchonidine, and cinchonine. Quinidine was less effective in malaria than quinine, but was the most valuable in restoring the heart rhythm. Cinchona and its alkaloids had been used in a very wide variety of diseases. It had been given in fevers of all kinds, especially in the early days. Its vogue in the prevention of malaria was only second to its curative effects. Its reputed antipyretic action could not be explained by any influence on protein metabolism (Hardikar). On account of their action as general protoplasmic poisons, quinine and its derivatives had some action as local anæsthetics, acting on the nerve-ending. Bromides had largely superseded quinine in Ménière's disease because its local toxic action caused labyrinthine disorder. Small doses increased the activity of smooth muscle and had been thought to shorten labour and favour uterine retraction. The alkaloids were the only real specific for malaria, although hundreds of other drugs had been recommended. In 1791 A. E. Brande had declared that angostura bark was as good in ague, dysentery, and putrid sore throat. In 1792 Samuel James had published observations on the superiority of a species of willow in the cure of agues, intermittent fevers, fluor albus, abscesses, and hæmorrhages, while in 1803 G. Wilkinson had advised broad-leafed willow bark for various diseases. In 1793 William Roxburgh had compared a species of mahogany with the Peruvian bark. More recently, organic arsenical preparations had been shown to be useful adjuvants, but were not specifics. Thomas Fowler (1736–1801), of "Fowler's solution," had written to Andrew Duncan that on several occasions he had been cured of remittent fever by eight drops of the "mineral solution of arsenic" thrice daily. The statement that malarial parasites might become resistant to quinine was based partly on reports of cases, and partly on the analogy with trypanosomes and other protozoal parasites. In fact, however, quinine-resistant plasmodia were very rare. Cases where quinine seemed not to control the fever were probably accounted for by failure of absorption or inadequate dosage. How exactly it exerted its action was not yet clear; it might act indirectly by producing a metabolite in the tissues. Hatcher and Weiss had estimated that 95 per cent. of quinine injected intravenously disappeared from the blood in five minutes and thought that it collected in the capillaries. Another view was that quinine favoured the production of antibodies, and it had been thought to form a film on the corpuscles and so prevent the entrance of the parasites. Quinidine was the dextro-isomer of quinine; its real nature had been determined by Pasteur in 1853. It had, weight for weight, five times as powerful an action as any other alkaloid in restoring the normal heart beat in auricular fibrillation. Hydroquinidine, the chief impurity of commercial quinidine, had a slightly more powerful action. Ethyl-hydrocupreine had been advocated for pneumococcal infections, but had proved disappointing in man.

Mr. A. R. Melluish proposed a vote of thanks to Sir Humphry Rolleston, and pointed out the aid given by pharmacists and chemists to the use of quinine. He deprecated the fact that only 10 per cent. of the quinine produced to-day came from the British Empire. The vote was seconded by Lieut.-Colonel C. T. Samman, who pointed out that a former Master of the Apothecaries had invented field cases for the transport of the plant.

Malaria and Quinine.

At a reception on Dec. 15th Sir Charles MacWatt, Director-General, I.M.S., 1922–26, spoke on malaria and cinchona in India, admitting that he had himself taken a daily ration of quinine over a period of 25 years. No one who cannot take quinine should, he thought, be passed as fit to reside in malarious regions of the tropics. It was unfortunate that at present India supplied only 4 per cent. of the cinchona bark needed, and he asked for further and intensive efforts to increase the production of cinchona within the British Empire. On Dec. 17th Mr. T. E. Wallis, reader in pharmacognosy—a subject of study recently admitted into the degree examination of the University of London—described how the pharmacognosist is able to define the form of cinchona bark most serviceable to the physician, to control the purity and identity of the drug, to analyse materials containing it, and to suggest new directions in which the bark may possibly be still further utilised. At the final meeting on that evening, Dr. G. Carmichael Low,

as president of the Society of Tropical Medicine, occupied the chair, and Dr. P. Manson-Bahr gave an address on quinine therapy in malaria from the aspect of the practical physician. He was followed by Dr. H. H. Dale, director of the National Institute for Medical Research, who commented on the curious fact that the medicinal treatment of malaria had changed only in detail during the last 300 years, in striking contrast to that (say) of syphilis or kala-azar. The cinchona alkaloids were still without a serious rival in the treatment of malaria, but why these alkaloids in particular were antagonistic to malaria infection remained a mystery. It was, he said, the great merit of Ehrlich that he had focused the search for remedies acting on the causes of infection, not simply on its symptoms; the resounding success which he achieved in the case of salvarsan had led to a hope of establishing a general connexion between chemical structure and biological effect, which was not yet realised. We were still at best only groping towards it. Although nothing better than cinchona had yet been synthesised, the work of W. Roehl on the action of the synthetic plasmoquine opened up a new field of investigation. Dr. C. M. Wenyon, director-in-chief of the Wellcome Bureau, gave some striking illustrations of the prompt action of quinine on the malarial parasite, although, he said, cinchona is powerless to prevent malarial infection. He was one of those who doubted the value of the daily prophylactic dose, if continued for longer than a month or two; but he looked forward to the day when there would be no more malaria and people would refuse any longer to tolerate the mosquito. The evening ended with a warm tribute to the organising ability and generosity of Dr. Wellcome, to which he briefly responded.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

SCHOOL CONDITIONS.

THE national executive of the Irish Trade Union Congress has requested the Minister for Education in the Irish Free State to receive a deputation to discuss the condition of the primary school buildings in the rural areas, and the need for providing funds for repairs and upkeep. At present the schools are the property of the managers, usually the local clergymen, and the State has no responsibility for their condition or their upkeep. The national executive is of opinion that many of the country schools are a menace to public health. A medical inspector in County Cork is quoted as saying that if a certain school remained open he would not be responsible for the health of the district. The Minister for Education has admitted that 111 schools require the provision of sanitary accommodation. This probably means that they are without any such accommodation, for, in the great majority of country schools, the only accommodation provided is an inadequate privy, which is seldom cleaned. The executive quotes examples of school buildings in a shockingly insanitary condition in several counties. One school in County Kerry, which has an average attendance of 112 children, is situated in the middle of a village, and has no sanitary accommodation whatever. The school medical officer for County Cork has reported that in 56 per cent. of the schools inspected by him the accommodation is unsatisfactory.

The Labour executive is calling attention to an age-long scandal on which the medical profession has time after time attempted to rouse the conscience of the Government. The head of the primary educational system under the old régime told a deputation which interviewed him on the subject years ago that he was not concerned with the health of the children attending the public schools, that his only business was with their education. When the Act providing for medical inspection of school-children became law in 1919, no power was given to the medical inspectors to inspect or report on the condition of the school buildings. The Government feared the effective opposition of the school managers if such a clause were inserted in the Bill, and the duty of the inspectors as laid down by the Act and the Regulations was confined to attention to the children themselves. Fortunately no such limitation affects the functions of the county medical officer of health, whose duty it is to report on any conditions adversely affecting the health of the people of his county. The Labour executive is of opinion that, until the burden of the care of the school buildings is taken from the shoulders of the managers and put on the public, the buildings will remain a menace to the health of the children.

In the meantime it is pleasant to note a small advance in the care of school-children which was made by the Dáil just before its adjournment last week. Hitherto the power to provide meals for school-children was limited to the authorities of the four county boroughs. A private Bill, introduced by Mr. Shaw, which proposed to grant similar powers to other urban authorities, was before the Dáil. It had little chance of passing through its several stages before the recess, but the Minister for Local Government and Public Health came to its rescue and adopted it as a Government measure, thereby speedily passing it through its remaining stages. The leader of the Labour Party, Mr. O'Connell, urged that similar powers should be given in rural areas as well as in urban, as was indeed recommended four years ago by the Committees of Inquiry on National Health Insurance and the Medical Services. The need for school meals is greatest in the rural areas where many of the children have travelled long distances. Dr. O'Higgins properly reminded the House that the argument for school meals is not based on the poverty of the children but on their requiring a warm meal in the middle of the day.

APPEALS BY VOLUNTARY HOSPITALS.

MOST voluntary hospitals throughout the country find themselves at the end of any year with a debit balance on routine maintenance expenditure. When extensions, reconstructions, or renewals on a large scale are contemplated, special appeals have to be issued. The present time of industrial depression was deemed inopportune for the launching of some of the appeals which had been contemplated this year; other hospitals had already embarked on schemes for capital expenditure which were deemed to be essential, and decided that it was necessary to try to raise extra money.

We append a list, which is by no means complete, of hospitals with outstanding special appeals. The information it contains was received at various times during the autumn months, and some at least of the hospitals concerned have since collected more money.

If notice is received within the next few days of other hospitals which are appealing for help for special purposes, a further list will be published.

TABULATED LIST OF HOSPITALS WITH SPECIAL APPEALS.

Name of town and hospital.	Date of appeal.	Amount required.	Amount received.	Purpose.
		£	£	
ALTON: Lord Mayor Treloar Cripples' Hospital	1929	100,000	50,000	To rebuild institution at Alton.
ARUNDEL and District Cottage Hospital	1930	8,000	6,300	Erection of a new cottage hospital.
BATH: Royal United Hospital ..	1929	100,000	62,000	Building of new hospital.
BEXHILL Hospital	1930	13,000	1,500	Building and equipment.
DONCASTER: Royal Infirmary and Dispensary	1925	156,000	110,000	Hospital and nurses' home.
EDINBURGH: Royal Infirmary ..	1930	500,000	154,000	New maternity and gynæcological wards with antenatal and out-patient departments.
EXMOUTH Hospital	1930	6,000	1,000	New children's and private wards; out-patient department; and X ray equipment.
GLASGOW: Victoria Infirmary ..	1930	105,000	61,377	Building and equipping auxiliary infirmary.
GLOUCESTER: Gloucestershire Royal Infirmary and Eye Institution	1929	20,000	12,500	Extension of wards and private beds, and out-patient department.
GOSPORT War Memorial Hospital	1930	15,000	9,400	Extension of administrative block and out-patient department, and increase of beds.
ILFORD: King George Hospital..	1928	200,000	100,000	Conversion of emergency to general hospital, and extended accommodation.
INVERNESS: Northern Infirmary..	1925	Increased to 140,000	120,000	Reconstruction and extension.
LONDON:				
Cancer Hospital (Free) ..	1928	150,000	22,000	Accommodation for paying patients and out-patients, and new radiological block.
City of London Hospital for Diseases of the Heart and Lungs..	1928	26,000	14,000	Surgical and X ray blocks, sanitary improvements.
East London Hospital for Children	1925	30,000	5,000	Building a nurses' home.
Great Ormond-street Hospital for Sick Children	1930	Not announced.	42,000	Rebuilding hospital on present site and on land adjoining.
Hospital for Tropical Diseases	1929	35,000	12,500	Construction work and endowment fund.
Middlesex Hospital	1925	1,220,000	974,000	Reconstruction.
Queen Charlotte's Maternity Hospital	1927	Over 500,000	150,000	Wards for puerperal fever and maternity cases.
Queen Mary's Hospital for the East End	1930	35,000	Over 1,000	To pay off deficit on maintenance and building fund.
Royal Free Hospital	1928	600,000	425,000	Extension of V.D., pathological, obstetrical, and gynæcological departments; provision of private wards; and completion of nurses' home.
Royal London Ophthalmic Hospital	1930	24,000	4,000	Extension of out-patient department and laboratories, and new theatre.
St. Bartholomew's Hospital..	1929	1,000,000	Not announced.	Surgical blocks and theatres; reconstruction of out-patients' department; maternity, gynæcological, and children's wards; research.
St. Mary's Hospital	1930	250,000	20,000	Paying wards; rebuilding medical school and nurses' home; extension of maternity wards.
St. Peter's Hospital for Stone	1928	24,000	13,000	Private beds; new out-patient department; reconstruction; and new pathological department.
Western Ophthalmic Hospital	1925	40,000	30,000	Rebuilding.
LOUGHBOROUGH and District Hospital	1928	40,000	33,400	New theatre; additional beds and maternity ward; reconstruction.
MANCHESTER: Ancoats Hospital..	1928	100,000	36,000	Additional beds, theatres, and special services.
MANCHESTER Northern Hospital for Women and Children ..	1926	150,000	90,000	New general hospital.
MARGATE and District General Hospital	1926	70,000	60,000	New general hospital.
SOUTHEND and District New General Hospital	1926	145,000	115,000	To build new hospital.
WEMBLEY Hospital	1930	10,000	1,016	Hospital extension.
WORKSOP: Victoria Hospital ..	1930	12,000	4,800	Hospital extension.

PANEL AND CONTRACT PRACTICE

The New Essex Medical Service.

THE Essex Public Medical Service was started in 1924 to provide medical attendance on the families of insured persons on a contract basis. The last annual report shows that there were 16,750 subscribers and 127 doctors working it, the average payment per subscriber being 10*s*. 1*d*. Last June a proposal was made to extend the service so as to include patients whose incomes lie between £250 and £400, and the central committee have agreed in principle to the formation of the new service, using the existing office and staff for its administration. But the new service will not be controlled by the E.P.M.S.; it will be responsible for its own finances and administration. The chairman will be nominated, however, by the parent committee, the remaining members of the new committee being three doctors who are actually working the new service. The conditions now set forth are intended to serve for the first year or two, when experience may make it feasible to draw up more detailed rules and regulations.

The rate of payment is 30*s*. per annum for each member of the family, adult or child. If there are more than two children under 16 years of age in a family, the first two will pay 30*s*. each and the others 20*s*. each.

Thus a family of four (parents and two children) will pay £6 per annum—30*s*. per quarter—in advance. If no adult member of the family is on the book, the reduced rate for children above two in number will not apply. In the case of an exceptionally large family, the doctor may arrange with the office for special rates for children. Subscribers will have the option of paying direct to the office or to a collector of the E.P.M.S., who will call on agreed dates. A subscriber is entitled to benefit three weeks after acceptance by a doctor.

Administrative expenses are to be met as follows. A charge of 6*d*. per quarter is to be paid on each subscription book towards expenses of administration. The service will pay the E.P.M.S. £20 per annum for the use of the office (one-fourth of the expenses of rent, heating, lighting, cleaning, and telephone). It is estimated that at the end of about a year, after the first 500 families have joined the service, the cost of administration will be met by a deduction of 5 per cent. from the total collections. For the present it is proposed to deduct 20 per cent. from collections, which will be reduced to 15, 10, and 5 per cent. as the office income balances expenditure. Doctors who join the service after the 20 per cent. deduction has been reduced may be required to pay an entrance fee.

A subscriber to the service is entitled to receive from his medical attendant:

(*a*) Medical and surgical treatment within the competence and skill of a general practitioner at the surgery of his medical attendant.
(*b*) When his condition requires it, ordinary medical and surgical treatment at his place of dwelling.
(*c*) All needful medicines.

He is not entitled, in consideration of his ordinary subscription, to medical service in respect of:

(*a*) Confinements and miscarriages, or to illnesses arising therefrom within ten days.
(*b*) Vaccinations.
(*c*) Administration of a general anæsthetic.
(*d*) Certificates and reports.
(*e*) Such expensive drugs or preparations as may from time to time be determined by the Committee.
(*f*) Examinations, court attendances, &c., under common law, and workmen's compensation, employers' liability and other statutes.

The class of patient to be included is one specially hard hit by taxation, high cost of living, and the heavy expense of education; moreover, as trade gets worse, salaries are going down. It is the class which, in the majority of cases, is responsible for doctors' doubtful and bad debts. It is believed that the service will prove of considerable financial benefit to doctors. It will bring in the breadwinner of the family (who is ineligible for the panel) and the family will be regular patients, in good seasons as well as in bad. There will be no bad debts and no trouble of keeping and collecting accounts.

The advantages and conditions of the service, so far as they concern subscribers, will be made known to such patients as the doctor may wish to invite to join it by means of a printed circular letter, which includes a form to be filled in by the patient and sent to his doctor. Copies of this circular letter will be supplied to doctors for sending to their patients, or, if preferred, will be posted direct to patients from the office.

The office of the new Essex Medical Service is that of the E.P.M.S. at 108, City-road, London, E.C. 1. Secretary: Mr. H. E. Norton.

Recurring Difficulties of Panel Practice.

At a recent meeting of the Paddington Medical Society Dr. E. W. Selby, a divisional medical officer of the Ministry of Health, spoke of some of the difficulties of insurance practice. He reminded his hearers that the regional officers of the Ministry were doctors who had had themselves much experience of insurance practice, and should be regarded as sympathetic colleagues rather than as inspectors. Their routine visits to panel doctors were found to be of great value for exchanging opinions and clearing up difficulties. Friendly investigation of prescribing on these lines had reduced from 20 to 2 per cent. the number of cases in which doctors had to appear before their panel committee. Speaking of the forms of medical record, Dr. Selby suggested that entries were most easily made at the time the patient was seen; if this were always done it would be easy for the doctor to make out an adequate report when a case was referred to the regional officer, when it was most important for the report to be sent promptly, especially if the patient were ill in bed. The reports made by the regional officers were, he said, advisory in nature; they always tried to take into consideration any extenuating circumstances connected with the patient's disability. He went on to deal with certification in short illnesses and in post-operative debility, where there was a tendency for disability to be certified for an unduly lengthy period, and admitted the difficulties of cases with permanent partial disability. Discussion showed that many practitioners found the certification of cases of pregnancy and post-partum debility to present difficulties; some of these might be overcome by the exercise of tact, but others could be met only by alteration of the certification regulations. A number of members pointed out that patients attending hospital were apt to remain "unfit" longer than was actually necessary; this was due in some cases to the doctor not receiving a report on the patient from the hospital, and to the fact that the hospital

did not sufficiently appreciate the necessity of getting the patient back to work. Prolongation of "unfitness" was sometimes due to the patient not being able to resume work in his particular employment except on a certain day of the week. There was also the difficulty of the patient who, owing to age or permanent partial disability, had to find some other and easier occupation.

Medical Benefit in Northern Ireland.

Our Belfast correspondent tells us that the first meeting of the Medical Benefit Council for Northern Ireland has been held. The chairman, Prof. R. J. Johnstone, pointed out that although as far as the administration of medical benefit was concerned the duties of the Council were in the main advisory, yet in addition the Council had the important duty of acting as a court of appeal in specific cases concerning the services rendered by individual doctors and chemists. The Minister of Labour said that the medical benefit scheme was one for the alleviation of suffering and for the preservation of life. His ideal of the medical service to be given by doctors to their insured patients was the same care, skill, and treatment as was given to ordinary private patients. He stressed the point that insured patients were private patients, for all had the free choice of doctor, the only difference being that the insured patient contributed weekly towards the remuneration of the doctor. The chairman said that all were agreed that the Minister's high ideal of medical service would be the aim of the medical men on the panel in Northern Ireland.

PUBLIC HEALTH SERVICES

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are 1929 statistics of three counties :—

Name of county and estimated (R.-G.) mid-year population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant mortality.	Young child (1–5 yr.) mortality.	Maternal mortality from childbirth.
Kent .. .. (1,145,300)	15·3	12·7	0·82	1·54	2·3	2·5	61	29	3·5
Durham .. (940,900)	20·2	12·9	1·06	1·09	3·0	1·5	94	57	6·2
Staffordshire. (709,900)	18·4	12·8	0·83	1·27	3·1	2·0	79	—	4·5

Registered stillbirths per 100 live births: Kent 3·4, Durham —, Staffordshire 4·2.

Kent.

Dr. A. Greenwood reports that the number of deaths showed an increase of 1666 on the total of the previous year. Diphtheria was less prevalent. There were 1941 cases with 148 deaths—a high case-fatality of 7·6 per cent. From many of the districts came reports of failure to secure the early use of antitoxin. An outbreak of true typhoid occurred in Northfleet U.D. in November–December. There were 17 cases with 7 deaths. Investigation tended to implicate meats sold in a cooked condition, but bacteriological examinations were negative as regards the handlers of foods in the shops. At the end of the year the tuberculosis waiting-list was: 32 for sanatoriums, 78 for hospitals, and 36 for surgical institutions. The number of patients at Lenham Sanatorium receiving artificial pneumothorax treatment increases. The out-patients attending for refills also increase, and extra accommodation has had to be made. About 24 per cent. of the syphilitic patients and 13 per cent. of the gonorrhœa patients cease attendance at the clinics before completing treatment. These percentages are similar to those obtained in previous years.

The county scheme for crippled children continued to operate satisfactorily. The base hospital at Swanley for "long-stay" cases has 48 beds for tuberculous and 32 for other crippling ailments of Kent children. Hospitals at Maidstone, Canterbury, and Dartford provide for "short-stay" cases, and there are eight out-patient clinics at which massage, remedial exercises, and other forms of physiotherapy are carried out in a systematic manner, and at which instructions are given as to the carrying out of physical exercises daily at home. Many of these out-patients are supplied with surgical appliances which need repair and adjustment. Twelve outside complaints of tuberculous milk were received and as a result seven cows with tubercle of the udder were found and slaughtered, and one suffering from tuberculosis but with the udder unaffected was also slaughtered. Four of the district medical officers have arranged to send milk samples to the county laboratory to be examined for tubercle. The medical officers of districts also report condemned tuberculous carcasses in order that the herd of the farm from which they came may be inspected. An outbreak of food poisoning occurred at a social with 117 persons present. Within three-quarters of an hour of the serving of refreshments about 30 persons were taken ill. The cause appeared to be antimony in the enamel of the jugs in which the lemonade had been made.

The arrangements for hop-pickers' camps seem to improve every year. About 60,000 pickers come from London for a month, and the growers provide for these, but there may be an equal number of relatives and visitors especially at week-ends. Hence overcrowding! Improved portable latrines are gradually replacing the objectionable fixed type. It is difficult to provide cookhouses with safe fires at a reasonable cost, and many cases of burns and scalds are caused by the open gypsy fires. An improved arrangement for water-supply last year was the installation, in some cases, of cisterns with a number of spring anti-waste taps. These not only save wastage but abolish the evening queues of water drawers.

Some improvement in the housing situation is perhaps indicated by an increase in the numbers of houses found unfit for human habitation, of closing orders made, and of houses where defects were remedied. New houses also showed an increase. Nevertheless, Dr. Greenwood points out that nearly 6000 houses are required *now*. In September representatives of the Home Counties held a conference with respect to the deposit of London refuse. A resolution was passed that no local authority should be permitted to deposit refuse within the area of another authority without the approval of that authority and of its county council, with a right of appeal to the Minister of Health. Dr. Greenwood shows that there is a comic side to this question of refuse dumping. Last year Folkestone complained because Cheriton tipped its refuse within the borough, whilst Cheriton complained of a Folkestone dump of refuse within its boundaries.

Durham.

Dr. C. Franks presents the report as the information required was not available when his predecessor

Sir T. Eustace Hill retired. As the result of the influenza epidemic the death-rate in the first quarter was 16·5 and the infant mortality 120. There was much less small-pox. The notifications for 1927, 1928, and 1929 were: 5101, 1124, and 473, whilst the deaths were 19, 3, and 1 respectively. Although there was an increase in the number of new houses erected both by local authorities and by private enterprise, no appreciable difference has been made in the grave conditions of overcrowding, and many new houses are required to replace those unfit for human habitation. A new fixed minimum income scheme has been adopted for the blind. The number of blind persons on the register shows an increase of 279 to 1321, as the result of more accurate ascertainment. Under the new scheme an augmentation grant up to 20s. per week is made to every unemployable blind adult on the register. From April 15th to the end of the year the cost was £9470. On Dec. 21st, 1929, there were 275 urgent cases of mental defect awaiting institutional treatment. Plans for a colony for 1000 mental defectives at School Aycliffe near Darlington are under consideration. The new veterinary section is now in operation. The chief veterinary officer began work on April 1st and four assistants on Oct. 1st. Animals slaughtered under the Order were 237, of which 93 had tubercle of the udder, 3 were giving tuberculous milk, 42 had tuberculous emaciation, 97 had other tuberculous lesions, and 2 were not affected. Of 316 samples of milk taken by the Food and Drugs Acts inspectors 6·6 per cent. were found to be tuberculous.

There was a large reduction in the prevalence of diphtheria but the case-fatality increased from 5·2 to 5·5 per cent. The deaths from measles, 218, were higher than in any year since 1925 when the total reached 450. There were 131 notifications of ophthalmia neonatorum and in 13 cases permanent damage of one or both eyes occurred. It is believed that earlier hospital treatment would have prevented this permanent damage. The county council has purchased a house at Bishop Auckland for a combined centre for all their medical services, and the antenatal clinic of the County Maternity Home has been transferred to it. Special sessions are held at many centres for the expectant mothers, and at some centres the appointment system has been successfully adopted. Grants from the Coal Fields Distress Fund have been instrumental in sending mothers and babies to convalescent homes or to the seaside, and also in providing clothing and boots and extra nourishment for necessitous families. The families receiving extra nourishment from this fund at the end of the year numbered 1779.

The thorough biological and chemical survey of the River Tees is still in progress and likely to prove a source of valuable information for all river custodians. It is considered that of the three rivers of the county, the Tyne and the Tees, each belonging as they do to two counties, would be better looked after by Rivers Boards.

Staffordshire.

Dr. W. D. Carruthers gives the usual table with respect to the hydrographical survey of the River Trent. The analyses made in July and September show how the Trent is affected by the junction with its various tributaries in the county. A percentage of oxygen saturation below 65 means that the water cannot support fish life. The first analyses taken after the river leaves "the Potteries" are far below this figure of 65. The first improvement comes after the Sow flows in from the Stafford region, when the figures for oxygen saturation are 49·5 and 56·5. Self-purification then goes on, but receives a bad set-back from the junction with the Tame, and finally, as the river joins the Dove, on the border of the county, its water for the first time reaches the "fish life" standard with figures of 76 and 62 respectively for July and September. The new houses built were 3479 compared with 2488 for the previous year, but at the end of the year there were fewer houses in course of erection. There is still much overcrowding, and it is not possible to construct houses at an economic rent for a large section of the population.

Sixty-one outside complaints of tuberculous milk were received, and as a result 38 animals were slaughtered under the Order and 7 disposed of by the owners for slaughter. On the other hand, eight complaints of tuberculous milk were made to outside authorities and in six instances the investigations conducted had a negative result. Returns are given of the milk-sampling for the last 10 months of the year. Of 1238 ordinary milk samples 74, or 6 per cent., were tuberculous. Of 90 Grade A (T.T.) samples one was tuberculous, whilst of 561 Grade A samples 14 or 2·5 per cent. were tuberculous.

There were 40 notified cases of dysentery; 33 occurred in Cheadle R.D., of which 31 were patients at the Mental Hospital, and of these four died. The Joint Committee for Tuberculosis obtained a magistrate's order under Section 62 of the Public Health Act, 1925, for the compulsory removal of an advanced consumptive to a poor-law institution. The man in question had left hospital against medical advice and his habits made it essential that he should not remain at home. The order was made for a period of three months and renewed for a like period, during which the patient died.

The total births numbered 13,125. Of these, midwives attended 10,154 and sent for medical aid in 3154 (31 per cent.). The midwives also attended 1551 cases as maternity nurses. The number of births which were not attended by midwives was therefore 1420; the largest percentage of such births being in the northern sparsely-populated area of the county. Facilities are to be provided at every centre for antenatal and postnatal work, but it will be a considerable time, says Dr. Carruthers, before they are extensively used by the mothers.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED DEC. 13TH, 1930.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 137 (last week 95); scarlet fever, 2029; diphtheria, 1468; enteric fever, 26; pneumonia, 997; puerperal fever, 53; puerperal pyrexia, 111; cerebro-spinal fever, 11; acute poliomyelitis, 8; acute polio-encephalitis, 3; encephalitis lethargica, 11; continued fever, 1; dysentery, 14; ophthalmia neonatorum, 84. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Dec. 16th–17th was as follows: Small-pox, 189 under treatment, 5 under observation (last week 206 and 5 respectively); scarlet fever, 1869; diphtheria, 2122; enteric fever, 12; measles, 87; whooping-cough, 115; puerperal fever, 25 (plus 11 babies); encephalitis lethargica, 121; poliomyelitis, 1; "other diseases," 51. At St. Margaret's Hospital there were 16 babies (plus 7 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 57 (0) from measles, 6 (0) from scarlet fever, 18 (2) from whooping-cough, 35 (3) from diphtheria, 49 (12) from diarrhœa and enteritis under two years, and 60 (9) from influenza. The figures in parentheses are those for London itself.

The fatal case of enteric fever was reported from Birmingham. Fifteen deaths from measles occurred at Hull, 11 at Liverpool, 4 each at Bristol and Swansea. Five deaths from diphtheria were reported from Birmingham and from Liverpool, 4 from Manchester, and 3 from Willesden. Diarrhœa accounted for 6 deaths at Birmingham, 3 each at Liverpool, Manchester, and Sunderland.

The number of stillbirths notified during the week was 286 (corresponding to a rate of 46 per 1000 births), including 51 in London.

DEATH *with* SMALL-POX.

A FATAL case provisionally assigned to small-pox in the return for the week ended Dec. 6th was that of an unvaccinated boy of 5. Dr. E. W. Caryl Thomas, medical officer of health for Dagenham U.D.C., tells us that as the result of two cases of small-pox occurring at the school the absentees were visited. Amongst these were the family D, which consisted of four members, Mr. D., Mrs. D., L. D., aged 7, and E. D., aged 5. Apart from Mr. D., who was vaccinated in the army, none of the family had been vaccinated. At the time of Dr. Thomas's visit on Nov. 27th, the elder boy, L. D., exhibited scars suggesting a recent attack of small-pox. E. D. had a number of scars and some scabs; the onset of his eruption was some four weeks previous. In addition, the mother was suffering, her onset being Nov. 9th. Just before the visit the family doctor had been called in to the boy E. D., who was complaining of sore-throat, and he notified him as suffering from diphtheria. As there were some scabs still on his body, he was removed to the L.C.C. small-pox hospital as a double infection, in preference to the local isolation hospital. The boy died some days after admission, the cause of death being certified as diphtheria.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

UNEMPLOYED PERSONS AND HEALTH INSURANCE.

PROLONGATION PROPOSAL.

Mr. GREENWOOD (Minister of Health) in moving the second reading of the National Health Insurance (Prolongation of Insurance) Bill in the House of Commons on Dec. 17th, said that during the first period of unemployment after the war the Coalition Government decided that as the number of unemployed stood at 1,250,000 they would not permit people to suffer from the effects of prolonged unemployment, and they increased the benefits of the National Health Insurance Act. In 1921 the first Prolongation of Insurance Bill was passed and it was continued until 1928 when it was brought to an end. The question had now been reconsidered and in view of the fact that so many people were unemployed and would be excluded from benefit, he had now taken advantage of the powers given under the Act of 1928 to prolong by regulation the period of insurance for these people for a further year. Those powers, however, were now exhausted, and if the position was to be dealt with it could only be by fresh legislation. The situation to-day was even more urgent than it was in 1921. To-day, with old-age pensions, widows' pensions, orphans' allowances, as well as health insurance, it was infinitely more serious if a man's insurance rights were exhausted. Recent experience had shown that the persons who most needed benefit were those who had suffered longest from unemployment and were, in consequence, somewhat enfeebled by malnutrition. Therefore it had been decided to continue these people in their insurance rights.

A SUGGESTED DEPARTURE FROM PRINCIPLE.

It had been suggested, said Mr. Greenwood, that there might be in this Bill the beginning of some serious departure from insurance principle, that it was the start down the slippery slope which would end with the Health Insurance Fund being in deficit, and that a situation similar to that in regard to unemployment would arise. That was the wildest possible exaggeration. The Government were really maintaining the insurance principle. The only point was that instead of the person paying his contribution for himself the Government were going to pay it for him. The approved societies could not be asked to bear this burden. It was impossible to say exactly how many people were affected by the Bill; they were persons who had not done any work for two and a half years or more. The number would probably be about 80,000. The cost would be between £80,000 and £130,000, say roughly £100,000. In addition, it was proposed to pay the State contributions as would have been the case if those persons were paying their own contributions, and that would cost between £14,000 and £24,000.

THE PRINCIPLE DISCUSSED.

Sir KINGSLEY WOOD said that this question had been interesting the approved societies for many months, and they had pressed the Minister of Health on it. The scheme did not affect a very large number of people. There was no proposal in the Bill to continue full insurance benefits; most of the benefits would be at only half rate. The maximum cash amount an insured man could get was 7*s.* 6*d.* per week, and in the case of a woman 6*s.* They might receive very much less, something like 3*s.* 9*d.* per week in each case. The principle hitherto followed by friendly societies and approved societies was that when an insured person was unfortunately not able to keep up his contributions his benefits must cease. That principle was being departed from in this Bill, and he asked whether it was the intention to pursue the same path in regard to health insurance as they had already pursued in regard to unemployment insurance. If they once admitted the principle that the State should pay the contributions of certain people who had fallen out of insurance benefit then there were other classes of insured people who would ask that their claims should also be considered.

THE BILL ACCEPTED.

After further debate,

Mr. GREENWOOD assured the House that before another year the Government would be in a position to make definite constructive suggestions for dealing with this problem.

Sir KINGSLEY WOOD said that in view of Mr. Greenwood's undertaking that there should be further inquiry into this matter, the opposition would not offer any objection to the remaining stages of the Bill.

The Bill was read a second time and passed through all its remaining stages.

In the House of Lords on Dec. 18th the National Health Insurance (Prolongation of Insurance) Bill passed through all its stages.

VIVISECTION EXPERIMENTS.

Lieut.-Commander KENWORTHY, in the House of Commons on Dec. 16th, asked leave to bring in a Bill to prevent the application of public money to vivisection experiments. He said that the British Medical Association had been good enough to send him, and he dared say to every other Member of the House, a document in reference to the Bill asking for it to be opposed, and the ordinary reading of that document would make it appear that he (Commander Kenworthy) wished to prevent those vivisection experiments. He might wish to do so, but it was not intended to prevent them by this Bill. There was a very wide objection to the taxpayers' and ratepayers' money to the extent of £130,000 or £145,000 a year being devoted to subsidising these experiments. If they were to go on there were many wealthy institutions which could continue to support them. There had been a tremendous increase in the number of these experiments and he did not think that that increase could possibly be warranted by the results. In 1927 there took place 13,871 cutting operations with anæsthetics, and 279,431 experiments

without anæsthetics—a total in 1927 of 293,302. In 1928 the figure had risen to 315,891, and in 1929 to 403,142—an increase of 87,250 in 12 months. That was unjustified and led to a great deal of unnecessary expenditure. In 1929 there were 513 animals, including cast Army horses, exterminated by poison gas experiments, all paid for by the taxpayers' money against the conscience and desire of a large majority of people in the country. This Bill was introduced in 1922 and 1924 and he was supported then by the present Secretary of State for Scotland, the present Home Secretary, the present Foreign Secretary, the present Secretary of State for War, and the present Secretary for the Dominions. The Bill consisted of only three clauses and was backed by Members of all three parties.

OPPOSITION TO THE BILL.

Major CHURCH, in opposing the Bill, said that very few Members of the House would be reluctant to have a full discussion on this very interesting and important subject if there was time for it. But since that was not possible in the circumstances he must, on behalf of the Medical Research Council, on which body he had the honour to represent that House, oppose the Bill, not because he believed in giving unnecessary pain to animals. There were very few in that House who would like to see the slightest harm done to any of the smaller creatures. There were very few who would view with anything but a feeling of misgiving any experiment clumsily carried out on any animal, whether for the purpose of curing it of a disease, or in the course of experiment on the animal with the object of saving human life. A great deal of sentiment was naturally brought to bear on a subject of this kind; but they had not merely to consider sentiment, they had to take into account the advance of knowledge and the uses to which animal experiments were put for the purpose not merely of saving human life, but also of saving the lives of animals. He would remind Lieut.-Commander Kenworthy that it would be extremely difficult to differentiate between money spent directly by the State in State research institutions, such as the National Institute for Medical Research at Hampstead, and similar places, and that which was granted for universities and other research bodies in the country carrying out experiments on animals. He also pleaded with the House to use some common-sense with regard to the figures which had been quoted by his hon. and gallant friend. They should realise that the greater number of those experiments were experiments in which there was not the slightest suspicion of pain being inflicted on the animals, in which there was neither anæsthetic used or necessary. A large number of those experiments were carried out on mice, rats, guinea-pigs, and animals of that kind for the purpose of testing the various diets which were afterwards standardised for the cure of certain specific diseases among children—rickets for example. A cure for rickets was established by experiments on animals. Every one of such experiments had to be tabled as experiments and had to be done under licence from the Home Secretary. Under the Bill these feeding experiments would be excluded. Many friends of his at the present time were engaged in a whole series of experiments on mice and rats, hedge-hogs, and other similar animals for the purpose of carrying out certain tests with regard to pituitary and other glandular extracts. Those experiments were of the simplest possible kind, and consisted of the injection by hypodermic syringe at certain times of certain substances. Experiments of that nature were well within the ambit of this Bill. He reminded the House that experiments of a serious nature were only allowed under regulations and only under the most stringent conditions were animals allowed to live after serious experiments had been carried out on them. In all other cases the animals were destroyed. The experiments were carried out under an anæsthetic.

LEAVE REFUSED.

On a division, leave to bring in the Bill was refused by 170 votes to 156—majority against, 14.

TREATMENT OF VAGRANTS.

In the House of Lords on Dec. 10th the Bishop of EXETER asked the Government what steps had been taken to secure more uniform and humane treatment of vagrants, and especially whether any steps had been taken to found any institutions to train juvenile vagrants; also whether public assistance committees had any power to make grants towards the maintenance of existing institutions for the reclamation and training of young vagrants; and moved for Papers. He said that they were very grateful for the Vagrancy Report, which had been rightly called the Casuals' Charter. He was, however, somewhat alarmed lest that report might remain only an aspiration and not come to be a reality. He was anxious that if any forward step was taken they should be certain that similar steps would be taken in every part of the country. They were very grateful for Dr. Lewis's report. It was the first time that they had really reliable data as to who the tramps were. Hitherto the popular idea had been that tramps consisted of people who would not work, and people who wanted work and could not find it. Those who had worked among them knew that there was a very large section who should rather be included under the term "cannot work." Dr. Lewis brought that fact out. The figures were very remarkable. He asserted with all his knowledge that a quarter of the tramps in the country were what were usually termed "mentals." Some were insane, a very large section were feeble-minded, and a good number had psychoneurosis. It altered the whole picture when one remembered that these poor feeble-minded creatures were being allowed to wander about the country to look for work which did not exist, and which, if they found it, they could not do. Surely no one could commend a system which had that for its result.

THE CASUAL WARD.

The criticism he would offer was the assumption that the casual ward was to continue, for those who were employable would find it less helpful to get employment than it used to be. He agreed that that section was a small one. Dr. Lewis suggested that 80 per cent. were habitually users of the casual ward. Probably that 80 per cent. were more or less unemployable, but the 20 per cent. who were employable would find that the regulations advised in the report would make it harder for them to find work. In the first place, the casual wards were to be 15 miles apart. How could a man after tramping 15 miles look for work? There was a section who could be reclaimed—namely, those who were in the casual wards through drink. Dr. Lewis put the proportion as one in eight. They could not save these men merely by giving them short terms of imprisonment. He would like to see an alteration made in the law enabling men voluntarily to enlist in homes which it was hoped the counties would set up, and that voluntary enlistment should be binding on them for a definite time. Dr. Lewis pointed out that the intellect of these feeble-minded tramps was that of an ordinary boy of seven or eight years. Could they trust children of seven or eight to act sensibly without some discipline? These homes should not be regarded as prisons; he would much rather they were looked upon as hospitals or schools. Many of those who were feeble-minded could become quite useful citizens if they were properly trained, but there must be power to train them. He had visited one of these detention colonies in Switzerland, which had much impressed him. The men in it were there by sentence of a court.

The Bishop of ST. EDMUNDSBURY AND IPSWICH said the problem of dealing with vagrants was a

very difficult one. He believed that those tramps whose mental capacity was not up to a fair average formed quite a small proportion of the number of vagrants, and unemployment had very little to do with the question. If they made inquiry they would find that the number of vagrants at present was no larger and in some parts very much smaller than it was before the war. They could not deal with this question at all without discriminating very carefully between the relatively small minority in respect of whom there was a real chance of doing something in the directions to which the Bishop of Exeter had alluded, and the very much larger proportion who certainly would not be dealt with satisfactorily by any of those methods. The first main factor in the making of vagrants was that most of them liked the life. They got sufficient food and shelter, because a certain number of people gave them what they wanted without any real inquiry into their circumstances or their needs. He did not think it was too much to say that among the persons who came before a public body as vagrants there was not more than 1 in 500 to whom help could effectually be given. There were only two main lines of remedy. The first was to direct public attention to the matter, and secondly to persuade the public that they might really leave vagrants to the care of the authorities or of voluntary bodies trained and equipped to deal with them effectually, and that alms personally given did harm and not good. But, of course, it was extraordinarily difficult to do this. To have institutions up and down the country to receive these tramps was not really going to be helpful. The kind of person likely to commit himself to the care of an institution of that sort for an indefinite time under discipline was very rare indeed

"INFAMOUS AND INTOLERABLE" CONDITIONS.

The Bishop of SOUTHWARK said it was stated in the report that "in a certain number of casual wards the conditions now existing are infamous and intolerable." Those were very strong words, and they were all the stronger because the report throughout was so restrained in its language. It was surely impossible to allow these conditions to continue without immediate action. It was stated in the report that out of 592 casuals examined 93 were found to be mentally defective, 32 were insane, and 34 were suffering from some form of psychoneurosis. If this proportion was applied to the 12,000 casuals to be found in the casual wards and on the roads on any one night, something like 1800 people among them were mentally defective, 600 were insane, and 600 others were suffering from some kind of mental defect. The committee reported that it was quite convinced that there was an appreciable number of casuals who were certifiable under the Lunacy Acts. The committee recommended that the officer in charge of the wards should report to the authorities any case in which there appeared to be some mental illness, and further that the medical officer of health should, at least once a month, pay an unexpected visit to the casual ward and medically inspect its inmates to see whether any of them were suffering from mental illness. That recommendation could be carried out without legislation, and he was anxious to know if any definite steps had been taken in that respect. He was also anxious to know what steps were being taken to coördinate the different areas dealing with this problem. Great emphasis was laid throughout the report on the fact that usually one found ineffective administration when the unit of administration was small, and good administration when the area of administration was large.

GOVERNMENT'S REPLY.

Lord MARLEY (Under Secretary for War), replying on behalf of the Government, said that the Minister of Health had been very much concerned with the Vagrancy Report, and he felt compelled to obtain the names of the particular wards pilloried as being "infamous and intolerable." The Minister had taken immediate action to secure improvement in those particular wards. On August 13th of this year the Minister issued a circular to all county councils, county boroughs, and joint vagrancy committees, and with it he enclosed a copy of the Vagrancy Report. In the circular the Minister called attention to Part IV. of the report, in which a judgment was expressed as to the badness of the conditions now prevailing in certain casual wards, which the Minister had noted with the deepest concern and regret. He was confident that the new authorities would agree with him that no branch of public administration ought to be allowed to consider itself liable to such reproaches, and he hoped immediate and vigorous steps would be taken for a general overhaul of casual ward arrangements so that decent and seemly provision might be made everywhere for the accommodation of casuals. The circular went on to say that the Minister had instructed the general inspectors to coöperate closely with local authorities and to keep the Ministry of Health informed of progress in securing the needed improvements; and the Minister had it in mind in the autumn to detail an officer or officers for special work in this matter. There were 12 general inspectors, including a chief inspector, now engaged in this work, and there were also four special assistant inspectors. Since the issue of the circular the Minister had learned with very great satisfaction that many councils and joint vagrancy committees had themselves undertaken an examination of the wards, and had set about the work of improving the conditions found to be unsatisfactory. In regard to the number of joint vagrancy committees, 18 such combinations had already been created by statutory orders, and 43 administrative counties and 67 county boroughs had been combined into those 18 joint vagrancy committees. Proposals were now being considered for five more joint vagrancy committees, which would include 11 additional administrative counties and 16 county boroughs. The Minister of Health had in draft a new Order which would regulate the relief of casuals and would embody such recommendations of the Vagrancy Report as could be made effective by means of an Order. With this Order the Minister of Health intended to issue a circular drawing attention to such other recommendations in the report as could not be dealt with suitably by regulation. The new Order would be issued in a very few days. All vagrancy committees constituted by the grouping of counties and county boroughs had power to contribute by annual subscription towards the support and maintenance of any institution which appeared to them calculated to render useful aid in the administration of relief of casuals. Under this head they could, by way of subscription, encourage the formation of training homes for casuals and others. He thought it would be better to segregate mental defectives in homes where they could be dealt with from an educational point of view.

The Bishop of EXETER withdrew his motion for Papers.

PHARMACY AND POISONS BILL.

In the House of Lords on Dec. 17th Lord MARLEY introduced the Pharmacy and Poisons Bill, which was read a first time.

THE CHRISTMAS ADJOURNMENT.

Both Houses of Parliament adjourned on Friday, Dec. 19th, for the Christmas recess, until Jan. 20th. In the House of Lords the Royal Assent was given to a number of Acts, including the National Health Insurance (Prolongation of Insurance) Act.

HOUSE OF COMMONS.

MONDAY, DEC. 15TH.

Pulmonary Tuberculosis and Disablement Pensions.

Dr. MORRIS-JONES asked the Minister of Pensions whether he was aware that in certain cases of pulmonary tuberculosis, although there might be extensive physical signs in the chest, a decision had been given that this did not necessarily indicate a high degree of disablement; that the presence of tubercle bacilli in the sputum did not mean that the man was totally disabled; that pensioners suffering from tubercular disease of the lungs were cut down in their assessments when it was found they were at work; and whether this had been done on the instructions of his department.—Mr. ROBERTS replied: The hon. Member would appear to have been misinformed as to the tenor of the Ministry's medical instructions. Assessment of pension is based on the degree of physical loss or incapacity sustained by an officer or a man in consequence of a particular injury or disease, not merely on the clinical signs present in the case. The statements referred to in the first two parts of the question, while conveying an obvious application of this principle, are far from adequately representing the principles on which medical officers of the Ministry work. With regard to the statement in the third paragraph of the question, it is never the case that an assessment is reduced simply because the man is at work, though the extent, if any, to which the man has shown himself capable of regular work is necessarily some evidence of incapacity.

WEDNESDAY, DEC. 17TH.

The Government and Factory Legislation.

Mr. MANDER asked the Home Secretary when it was proposed to introduce the Factories Bill.—Mr. CLYNES replied: I regret I am not in a position to make any statement on this point.

Prison Administration.

Dr. PHILLIPS asked the Home Secretary whether he had had under consideration the appointment of a departmental committee to investigate the administration of prisons; and, if so, whether he proposed to set up such a committee.—Mr. CLYNES replied: I propose to set up at an early date a committee to investigate the problem of persistent offenders who return to prison repeatedly, and pending the result of this investigation it would not be desirable to appoint a committee of inquiry into other aspects of the prison question.

Capital Punishment.

Mr. HACKING asked the Home Secretary what action he proposed to take in connexion with the report from the Select Committee on Capital Punishment.—Mr. CLYNES replied: Before I can make any statement on a subject of such vital importance I must have time to consider the report in all its bearings and all the issues involved.

Sterilisation of the Mentally Unfit.

Mr. SORENSEN asked the Minister of Health whether he had considered resolutions requesting the appointment of an inquiry into sterilisation in relation to the mentally unfit; how many local authorities had endorsed these resolutions; and what he proposed to do in the matter.—Mr. GREENWOOD replied: Twenty-one local authorities have endorsed resolutions in favour of an investigation of this kind; but, as I explained in reply to a question on Nov. 27th, the issue is not one which can suitably be made the subject of a separate inquiry.

Infected Mutton from South America.

Mr. THORNE asked the Minister of Health if he was aware that considerable quantities of imported mutton and lamb from the Argentine Republic and Chili were infected with caseous lymphadenitis, and were escaping inspection at the ports and reaching butchers' shops, and that in order to evade inspection quantities of legs, shoulders, sides, saddles, and other parts, cut from diseased carcasses, were being imported; and if he would take steps to prohibit the importation of mutton from these countries other than in carcass, and order a more rigid examination of all imports, and insist that the work of cutting the glands was carried out by skilled butchers.—Mr. GREENWOOD replied: I am aware that caseous lymphadenitis is found in a certain proportion of carcasses of mutton and lamb imported from the countries referred to. The normal practice is to make a preliminary examination at the port of 10 per cent. of each consignment of whole carcasses, and to examine the remaining 90 per cent. either at the port or elsewhere if the result of the preliminary examination shows this to be desirable. I do not think it necessary to recommend any modification of this practice. At a conference recently held between medical officers of the ports principally concerned and officers of my Department it was decided that imports of mutton and lamb from South American countries should receive special attention, and that severed parts of carcasses should in all cases be given complete examination. I am considering whether any further conditions should be laid down in connexion with the importation of severed parts of carcasses. I understand that the work of cutting the glands is at all ports entrusted to persons who have experience of the work, and I do not think it necessary to make any special recommendation on this point.

Cheese Wrapped in Tinfoil.

Major GEORGE DAVIES asked the Minister of Health whether his attention had been drawn to a special investigation, made by the medical officer of health to the Lambeth Borough Council, into the possibilities of tin poisoning from cheese wrapped in tinfoil, the analyst reporting that the result of his investigation indicated that cheese so prepared in this country could be regarded as perfectly safe for human consumption; and whether he would take all steps to relieve public anxiety on the matter.—Mr. GREENWOOD replied: I have received a communication from the Lambeth Borough Council enclosing a report in which the medical officer of health makes the statement referred to. Some samples of cheese prepared in this country have been found to be unduly contaminated by the tinfoil in which they were wrapped, but I understand that the industry is aware of the importance of reducing the extent of the contamination to the lowest possible limit, and is making efforts to achieve this end. In the meantime I am keeping the matter under observation, but I do not think it necessary at present to make any further statement.

A National Maternity Service.

Viscountess ASTOR asked the Minister of Health whether it was intended to introduce legislation making provision for a national maternity service.—Mr. GREENWOOD replied: I am sending the noble lady a copy of a circular and memorandum which I have recently issued to local authorities on the subject of maternal mortality. As stated in the circular, the Government have decided to undertake negotiations with the various authorities concerned with a view to formulating a scheme on a national basis for the care of maternity. Such negotiations are a necessary preliminary to the introduction of legislation for this purpose.

Lieut.-Colonel FREMANTLE asked the Minister of Health if, before any scheme for a national maternity service was formulated, he would confer with the midwives through the Incorporated Midwives' Institute and the Queen's Institute of District Nursing, as the respective bodies mainly representing and employing them, as well as with bodies representing the medical profession and other interests concerned.—Mr. GREENWOOD replied: I will consider the suggestions made by the hon. and gallant Member.

Wandle Valley Hospital Accommodation.

Mr. MILLS asked the Minister of Health if he was now in a position to sanction the Wandle Valley hospital construction, Surrey.—Mr. GREENWOOD replied: I have directed a public inquiry to be held into the application in question. I shall not be in a position to give my decision on the application until I have considered the report on the inquiry, but there will be no avoidable delay.

Sulphur Dioxide in Fruit Pulp.

Viscount ELMLEY asked the Minister of Agriculture (1) when he would introduce legislation amending the part of the Merchandise Marks Act relating to the amount of sulphur dioxide permissible in imported pulped fruit, and (2) if he would make an order to compel jam manufacturers to label their products to show whether they were made of preserved fruit.—Dr. ADDISON replied: The regulation of preservatives in foodstuffs is provided for under the Public Health Acts, under which it would be impossible to discriminate between imported and home products. I am, however, carefully considering whether, and in what way, steps can be taken to indicate to the consumer that the jam he is purchasing is, or is not, made entirely from home-grown fruit.

Extension of Westminster Hospital.

Lieut.-Colonel FREMANTLE asked the First Commissioner of Works if, in view of the necessity of the Westminster Hospital concentrating outlying departments and extending on the adjacent site now occupied by the Stationery Office, he would consider helping Parliament to act in support of its local hospital by assisting it to acquire the site of the Stationery Office on easy terms, partly in exchange for outlying sites and leases now held by the hospital.—Mr. LANSBURY replied: I regret that it is not possible for me to assist the Westminster Hospital in the manner suggested.

Volunteers and Poison Gas Experiments.

Mr. FREEMAN asked the Secretary for War the number of volunteers who had submitted to poison gas experiments; and what fund, if any, existed to compensate them in case of accident or injury or their dependents in case of death.—Mr. T. SHAW replied: Since Jan. 1st, 1929, some 520 volunteers have undergone tests with the object of proving the efficacy of preventive and curative treatment for skin burns and of confirming the adequacy of the protection afforded by respirators. Many of these volunteers have undergone more than one test. Every care is taken to ensure that the test involves no risk to the health of the volunteers, but, if an injury was sustained, it would be dealt with as attributable to the Service, and such compensation would be paid from Army funds as the ordinary regulations provide.

Prevention of Influenza.

Mr. LOUIS SMITH asked the Home Secretary whether, in view of the sanction he had given to by-laws enabling municipalities to prohibit the attendance of children at places of entertainment when there was local influenza, he could state how he proposed to define the term influenza.—Mr. CLYNES replied: I am not aware that any by-laws have been made on this subject. The hon. Member may be referring to a condition that may be attached by a licensing authority to the grant of a licence under the Cinematograph Act, 1909. I understand that a number of such licensing authorities have made it their practice to attach a condition designed to exclude children from premises licensed under the Act during an epidemic of infectious disease. But these conditions do not require my sanction, and any question regarding their validity or interpretation is a matter for the courts.

FRIDAY, DEC. 19TH.

Purity of Agricultural Produce.

Brigadier-General CLIFTON-BROWN asked the Minister of Health whether, in order to improve the position of home-grown agricultural produce on the home market, he would take steps to ensure that imported food, milk, and other dairy produce were subject to regulations concerning quality and purity similar to those enforced in the case of home produce.—Mr. GREENWOOD replied: Regulations concerning the quality and purity of food are made on public health grounds or otherwise to protect the interests of the consumer. In general, therefore, home-produced and imported foods are subject to the same requirements. In many respects the actual control of imported foods is the stricter since these articles are subject to inspection at the time of importation as well as at the time of exposure for sale. As regards imported milk, the quantity of which is insignificant, it would not be practicable to enforce the detailed requirements of the Milk and Dairies Order, and in lieu thereof a strict bacteriological condition is imposed which does not apply to home-produced milk.

Post-vaccinal Encephalitis.

Mr. FREEMAN asked the Minister of Health how many of the 97 deaths from post-vaccinal encephalitis, referred to on page 73 of the annual report of the chief medical officer for 1929, appeared in the annual statistical reviews of the Registrar-General as caused by vaccination.—Mr. GREENWOOD replied: Of the 97 deaths in question 30 have been classified to vaccinia, and have appeared under that heading in the annual statistical reviews of the Registrar-General.

Mr. FREEMAN asked the Minister of Health whether, in view of the continued occurrence of deaths from post-vaccinal encephalitis after the use of Government lymph extracted from the vesicles of rabbits, he would consider the desirability of dispensing with the use of these animals in connexion with the preparation of the Government lymph supplies.—Mr. GREENWOOD replied: This question has been fully considered, but as I am advised that there is no evidence that post-vaccinal encephalitis is attributable to the use of rabbits in connexion with the preparation of lymph, I do not consider that any change in the present practice of the Government lymph establishment is necessary.

MEDICAL NEWS

University of Oxford.

On Dec. 17th the following degrees were conferred:—

D.M.—R. S. Creed and E. B. Strauss.

B.M.—Anne D. M. Adams, F. R. Crookes, H. R. J. Donald, H. C. Harley, R. S. Harrison, M. A. Hatt, J. M. Lees, Q. St. L. Myles, N. C. Parfit, and F. M. Trefusis.

University of Cambridge.

On Dec. 19th the following degrees were conferred:—

M.B. & B.Chir.—D. W. Bawtree, A. T. Curnow, and W. R. H. Pooler.

M.B.—S. E. F. Gooding and W. E. Mashiter.

B.Chir.—D. G. Macdonald and F. G. Booker.

University of Birmingham.

On Dec. 19th the following degrees were conferred:—

M.D.—Felix Smith.

M.B. & Ch.B.—R. H. Fooks, C. E. Moorhead, and J. V. Walker.

L.D.S.—R. H. Allen, R. A. Cohen, Flora M. Grant, R. C. Lewis, R. E. Marlow, H. E. Munro, and Queenie A. L. Whitmore.

University of Liverpool.

At recent examinations the following candidates were successful:—

M.CH. ORTH.

A. C. Armstrong, J. C. Drummond, L. W. N. Gibson, M. K. Hussein, P. Roux, and V. J. M. Taylor.

M.D.

G. S. Clouston, T. B. Davie, J. H. Follows, J. Hatton, D. E. P. Pritchard, J. E. Wallace, and Kathleen M. Ward.

FINAL EXAMINATION FOR M.B. AND CH.B.

Part A (1924 Regulations).—F. C. Angior, Mary F. Lacey, F. T. B. Lovegrove, and D. I. A. Williams.

(In individual subjects only).—G. R. Critien, D. J. Hoskingson, C. Y. Howarth, and Beatrice L. H. Sergeant.

Part B.—*C. G. Burgess, J. M. Erskine-Young, and H. E. C. Sutton.

* Distinction in Surgery.

Part I (1923 Regulations).—R. Fairhurst.

Part III.—H. F. Cohen, F. J. H. Crawford, A. Gardner, Teresa Lightbound, and V. T. Parkinson.

DIPLOMA IN TROPICAL MEDICINE.

K. N. Bagchi, L. B. Bier, J. Caplan, D. S. Chowdhary, T. H. Davey, L. M. Ghosh, F. Hawking, L. J. A Loewenthal, D. McElwee, J. B. MacKie, Y. B. Mangrulkar, W-K. Miau, H. W. Mulligan, F. O'Driscoll, M. Singh, J. K. Sung, G. Verghese, J. L. A. Webster, and J. Willoughby.

University of London.

The title of Emeritus Professor of Fine Art in the University has been conferred on Mr. Henry Tonks, F.R.C.S., on his retirement from the Slade Chair of Fine Art at University College.

The degree of D.Sc. has been conferred on Mr. G. F. Marrian (in biochemistry) and Mr. Philip Eggleton (in physiology).

On the recommendation of the Board of Management of the London School of Hygiene and Tropical Medicine, Sir George Newman has been appointed Heath Clark lecturer for 1931.

Royal College of Surgeons of Edinburgh.

At a meeting of the College on Dec. 17th, with Dr. J. Haig Ferguson in the chair, the following 30 successful candidates (out of 95 entered) who passed the requisite examinations between Sept. 29th and Oct. 7th, were admitted to the Fellowship:—

Philip Jacob Alpers, Sheikh Amir-ud-Din, Ahmad El-Sayed Ali Ammar, Thomas Cecil Baker, Diana Jean Kinloch Beck, Evert Frederick Birkenstock, William Mark Brown, Alfred Rainald Keith Burne, William John Anson Coldstream, James Cook, George Harvie Duncan, Harry Medcalf Fisher, Ian Comyn Fraser, Phillip Gibbin, Laurence Samuel Henry, Bruce Ernest Lawrence, Daniel Richard Lewis, William Laurence Macdonald, Hamish Grant McPherson, Alexander Mayne Martell, Alexander Smith Morton, James Duncan Murdoch, Thomas Alexander Ogilvie, Doddaballapur Hari Rao, Walter Ogilvy Reid, Kiranla, Sen, Tarachand Dayasing Shahani, Robert Sharpe Venfers Bryan Williams, and Thomas Isaac Williams.

Fulham Power Station Inquiry.

At an inquiry which is being held by the Electricity Commissioners into the application of the Fulham Borough Council for consent to extend their generating station in Townmead-road, Mr. J. H. Ryder, consulting engineer to the Council, described apparatus for the elimination of sulphur fumes by the treatment of flue gases with water, and said he believed it was possible to eliminate sulphur from the gases at Fulham. Evidence was given by Sir Frank Baines of the increasing damage to public buildings in London due to smoke pollution in the past few years. Dr. F. Barrie Lambert, on behalf of the L.C.C. Public Health Committee, said that when the Council in 1927 withdrew its opposition to the Battersea proposal it had not a full appreciation of the possible danger from sulphur fumes. The danger of mass production was not then considered. Mr. J. E. Singleton,

K.C., in opening opposition on behalf of the L.C.C., and three associated councils, said that no one doubted the existence of danger to health and buildings if there was further pollution of the atmosphere. At Battersea there had been a great advance in preventing the evolution of oxides of sulphur, and he asked for an opportunity of seeing these tests in operation before leave was granted for extension at Fulham. Dr. J. S. Owens, speaking for the Department of Scientific and Industrial Research, said that in the presence of sulphuric acid particles fog was formed at a lower relative humidity; the smaller the particles the more effective they were in producing fog. He went on to consider the possible risk from inversion of the usual sequence of air temperature. Normally this fell as one went from the ground upwards, but there was always inversion over the top of a fog which increased the likelihood of flue gases sinking to the ground, and inversion increased this danger. If the whole of the flue gases from the proposed station settled down over an area (say) of a square mile, they would cover it to a depth of 30 feet. On behalf of the L.C.C. Mr. Trevor Watson, K.C., stated the conditions which the Council thought should be imposed if the application were granted, the first of these being that the sulphur content of the effluent gases should not exceed gr. 0·02 per cubic foot. Mr. J. A. Robertson, consulting engineer, said that a small number of stations spread over a large city did not in his opinion cause so much damage through sulphur dioxide as one big station, but he believed the solution of the problem of eliminating sulphur fumes was nearer than many people thought. Dr. W. Allen Daley, principal medical officer to the L.C.C. General Public Health Branch, said that the poor people in the vicinity of the proposed power station would continue to use coal fires unless electricity was particularly cheap. He regarded as satisfactory a limitation of SO_2 in the atmosphere to gr. 0·02 per cubic foot. Mr. Tyldesley Jones, K.C., for the Fulham Borough Council, remarked that wherever the station was put the sulphur nuisance must be prevented. The Fulham Council had adopted the Modave purifying plant which they believed to be still further capable of improvement, but should it be found unsatisfactory it could be scrapped. Everything which could reduce the domestic coal consumption would tend to mitigate the mischief of smoke pollution. The L.C.C., he remarked, was having to extend the boiler capacity of its Greenwich station regardless of the consequences in the matter of sulphur content. The public inquiry closed on Dec. 20th.

Instruction for D.P.H.

A three-months' course of lectures and demonstrations on Clinical Practice and in Hospital Administration will be given at the North-Eastern Hospital, St. Ann's-road, Tottenham, by Dr. F. H. Thomson, the medical superintendent, on Mondays and Wednesdays at 4.45 P.M. and alternate Saturdays at 11 A.M., from Jan. 5th. Application should be made to the Medical Officer of Health, London County Council, Public Health Department (Special Hospitals), Victoria Embankment, E.C. 4.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Jan. 2nd, 1931.—4 P.M., Mr. J. D. McLaggan: Atrophic Rhinitis.

Appointments

HAINWORTH, E. M., M.D. Lond., F.R.C.S. Eng., has been appointed a Medical Referee under the Workmen's Compensation Act for the Districts of the Beverley, Bridlington, Goole, Great Driffield, Kingston-upon-Hull, Pocklington, and Selby County Courts.

Royal United Hospital, Bath: KINDERSLEY, C. E., F.R.C.S. Eng., Surgeon, and MITCHELL, D. A., M.D. Lond., F.R.C.S. Edin., Surgeon in charge of the Gynæcological Department.

Cardiff Royal Infirmary: WADE, J. O. D., M.S. Lond., F.R.C.S. Eng., and HARRIES, D. J., M.D., B.S. Lond., F.R.C.S. Eng., Honorary Surgeons.

Certifying Surgeons under the Factory and Workshop Acts: BARBER, G. O., L.R.C.P. Lond., M.R.C.S. (Dunmow); DAVIS, E. C., M.B., Ch.B. Edin. (Llandyssul, (Cardigan); and CARMICHAEL, R. McL., M.B., Ch.B. Glasg. (New Tredegar, Mon.).

Vacancies

For further information refer to the advertisement columns.

Brighton, Royal Sussex County Hospital.—H.S. £150.

Burnley, Victoria Hospital.—Two H.S.'s. Each at rate of £150.

Bury St. Edmunds, West Suffolk General Hospital.—Jun. Res. M.O. £150.

Chesterfield and North Derbyshire Royal Hospital.—H.S.'s. All at rate of £100–£175.

Dumfries, Crichton Royal Mental Hospital.—Locum Tenens Clin. Pathologist. 7 gns. weekly.

Dunedin, New Zealand, Otago Hospital Board.—Radio-Therapeutist. £1000.

Finsbury Borough Council.—Asst. M.O.H. £750.

Hertford County Hospital.—Hon. Asst. Surg. Also H.P. At rate of £150.

Hospital of St. John and St. Elizabeth, 60, Grove End-road, St. John's Wood, N.W.—Radiologist.

Hospital for Sick Children, Great Ormond-street, W.C.—Part-time Jun. Cas. O. At rate of £150.

Hull Royal Infirmary, Sutton Branch.—H.P. At rate of £160.

Indian Medical Service.—Commissions.

Leamington Spa, Warneford General Hospital.—Res. H.P. and H.S. Each £165.

Liverpool, David Lewis Northern Hospital.—Two Hon. M.O.'s for Ear, Nose, and Throat and Dermatological Departments.

Liverpool Sanatorium, Delamere Forest, Frodsham.—Asst. Med. Supt. £250.

Mansfield, Notts, Harlow Woods, Orthopædic Hospital.—Res. Surg. O. £275.

Margate; Royal Sea Bathing Hospital, &c.—H.S. At rate of £200.

Middlesex C.C.—Dist. M.O. for Tottenham. £180. Also Public Vaccinator.

National Hospital, Queen-square.—Hon. Surg. Asst. Also Hon. Asst. Surg.

Nelson Hospital, Merton, S.W.—Res. M.O. £100.

Nottingham General Dispensary.—Res. Surgeon. £250.

Nottingham General Hospital.—H.S. At rate of £150.

Poplar Hospital for Accidents, East India Dock-road, E.—Sec. Res. O. £175.

Prince of Wales's General Hospital, N.—Asst. Pathologist. £200.

Rotherham Hospital.—H.P. £180.

Sheffield, Jessop Hospital for Women.—Three Asst. H.S.'s. Each at rate of £100.

Sheffield Royal Infirmary.—H.P., H.S., Asst. Aural and Ophth. H.S. Also Asst. Cas. O. All at rate of £80.

Swansea County Borough.—Asst. M.O. £600.

Swansea Hospital.—Sen. Res. O. £300.

Wallasey Victoria Central Hospital.—Jun. H.S. At rate of £100.

Walsall General Hospital.—H.S. At rate of £150.

Weston-super-Mare General Hospital.—Res. H.S. At rate of £150.

Worcester County and City Mental Hospital, Powick.—Jun. Asst. M.O. £350.

Wrexham and East Denbighshire War Memorial Hospital.—Two Res. H.S.'s. Each at rate of £150.

Births, Marriages, and Deaths

BIRTHS.

PHILIP.—On Dec. 16th, at Maldon Court, Maldon, Essex, the wife of J. L. R. Philip, M.B., Ch.B., of a son.

MARRIAGES.

DICKIE—KIRBY.—On Dec. 17th, 1930, at Christ Church, Rawalpindi, by the Rev. J. G. Lister, M.A., Major Ronald Stevenson Dickie, R.A.M.C., younger son of the Rev. W. S. Dickie and Mrs. Dickie, Saltcoats, Ayrshire, to Violet Eleanor, younger daughter of Colonel J. T. Kirby, Indian Army, and Mrs. Kirby.

DEATHS.

HICKMAN.—On Dec. 18th, Lieutenant-Colonel James Hickman, R.A.M.C. (retired).

SIMEON.—On Dec. 15th, Edward A. Simeon, M.R.C.S., L.R.C.P., of Hoe-street, Walthamstow, E., aged 70.

STOWERS.—On Dec. 17th, 1930, at 38, Regent's Park-road, N.W.1, James Herbert Stowers, M.D., of 128, Harley-street, W.1 in his 80th year, peacefully in his sleep.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

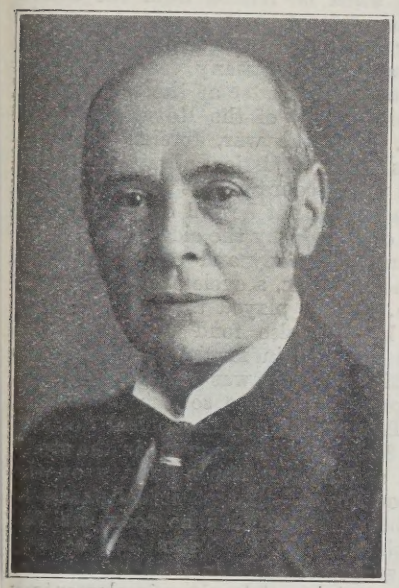
DONATIONS AND BEQUESTS.—Mr. Robert Slater Boddington, J.P., of Manchester, left £1000 to the Manchester Northern Hospital for Women and Children, to endow a bed in that hospital.—Mr. George Fowler Hutchings, of Weston-super-Mare, left £1500 to the Bristol Royal Infirmary to endow a bed in the women's ward, and £100 each to the Bristol Orthopædic Hospital for Crippled Children and the Bristol Blind Asylum.

OBITUARY

JAMES HERBERT STOWERS, M.D. Brux., M.R.C.S. Eng.

THE death of Dr. Stowers on Dec. 17th, in his eightieth year, removes the senior representative of British dermatology. With him there passes the last of those of who lived and flourished with Jonathan Hutchinson, Colcott Fox, Radcliffe Crocker, and Malcolm Morris.

James Herbert Stowers was the fourth son of Nowell Stowers, M.R.C.S., who practised in Kennington. He was educated at St. Bartholomew's Hospital, whence he qualified in 1873, and among the teachers of whom he often spoke with admiration were Luther Holden and James Paget. During the next few years he gained a varied experience as ophthalmic house surgeon, registrar, dermatological assistant, and administrator of anæsthetics at Bart.'s, and resident medical officer at the Evelina Hospital for Sick Children. He entered general practice in Shrewsbury, but soon returned to London to specialise in dermatology, and was appointed physician to St. John's Hospital, Leicester-square. He also joined the staff of the North-West London Hospital, where he remained at work until over 40 years later, when it was amalgamated with the Hampstead General Hospital. Most of his professional work was done at the St. John's Hospital and at the North-West London. The former institution owes him a special debt, for it was largely due to his initiative and tact that the post-war reorganisation of its medical staff was made possible, and its important position as a teaching centre was retained and enhanced. His enterprise and effort in founding the London School of Dermatology was recognised by his colleagues, and some years ago their appreciation was shown by a complimentary dinner, at which he received well-deserved congratulation. Dr. Stowers was a member and corresponding member of various British and foreign dermatological societies, and a past-president of the British Dermatological Society and the Dermatological Section of the Royal Society of Medicine. Outside his own specialty, also, he was well known, for he belonged to many different societies which reflected the wide range of his interests. Despite numerous appointments to hospitals and institutions he found time to take part in local affairs and politics, while in later years his experience was always at the service of the London and Counties Medical Protection Society. As a member of the Council for over 30 years he showed a keen regard for medical ethics, and his consistent work was of much value to the society. His attention to detail, the clarity and precision of his utterances, and his personal charm would have been assets in many walks of life, and they found full scope in the career he had chosen.



DR. STOWERS.

Photograph: Elliott & Fry.

During the late war Dr. Stowers took charge of the Department for Diseases of the Skin and Venereal Disease at University College Hospital. He married Henrietta, daughter of Edward Shepherd, and she is left with two sons, one of whom, Dr. Raymond Stowers, is in active medical practice.

CHARLES ALGERNON STIDSTON, D.S.O., M.D. Lond.

WE have to record that Mr. C. A. Stidston, surgeon to the Royal Hospital, Wolverhampton, died on Dec. 15th in his fiftieth year. Son of the late Charles Stidston, of Plymouth, he received his medical education at St. Bartholomew's Hospital where he gained the Foster Prize and the Wix Prize. He went to Wolverhampton in 1907 as resident medical officer of the General, now the Royal Hospital, and was appointed honorary assistant surgeon two years later, becoming full surgeon in 1920. On the outbreak of war in 1914 Mr. Stidston was called up with his Field Ambulance, the 2/3rd North Midland (Territorial Force). He served throughout the war and was for 18 months at the front in France. He was in command of his field ambulance during the difficult and anxious fighting which followed the battle of Cambrai, and for services in the field on this and other occasions was awarded the D.S.O. At the end of the war he retired with the rank of lieut.-colonel and resumed his practice at Wolverhampton.

We owe the following appreciation to one of his hospital colleagues. "Charles Algernon Stidston, whose loss is deplored not only by his colleagues and friends but by the inhabitants of Wolverhampton and South Staffordshire among whom he lived and practised for 21 years, was a man of original personality and varied gifts. His abounding vitality, his charm of manner, and breadth of sympathy earned him the devotion of his patients, rich and poor alike. He had a lively and spontaneous wit and a gift of expression both in speech and writing which were the delight of his friends. He could be pungent on occasion but even his victims were ready to forgive him for his wit, and enjoy a laugh against themselves. He was the warmest, the most faithful, the most generous of friends. He had his fierce hatreds too, for there was nothing half-hearted about him. To serve a friend no effort and no sacrifice were too great. With equal prodigality he spent himself in serving many who had no claim but their needs and his own generosity.

"At the Royal Hospital he threw himself into his work with the zest and devotion which he displayed in all his pursuits. Although he had a large and very successful general practice, it was his ambition and intention to devote himself entirely to surgery as soon as circumstances permitted. It was a tragic disappointment to find himself disabled by the illness to which he finally succumbed, at the very

moment when he saw the prospect of realising his ambition. For five months he lay ill and almost helpless. He never murmured or complained, and bore himself throughout with characteristic dignity and fortitude. Courage, generosity, and modesty were parts of his nature and they displayed themselves equally in war and in peace."

Mr. Stidston leaves a widow with one daughter.

CHARLES HENRY PHILLIPS, M.D. Durh., F.R.F.P.S. Glasg.

Dr. C. H. Phillips died on Nov. 23rd at Bournemouth where he had lived for some years in retirement. Born in 1847, he was first trained for a business career, but his attention was diverted towards medicine and he qualified from Owens College, Manchester, in 1875. After working for some time at Bury in Lancashire, he went to the Potteries in 1879, and was for 36 years visiting medical officer to the Joint Infectious Diseases Hospital at Bucknall, Stoke-on-Trent, and to the Small-pox Hospital at Bagnall. It was largely through his efforts that these institutions grew from small beginnings to their present state of efficiency. "Dr. Phillips was never one to acclaim his own achievements," writes a colleague, "but to those who had the privilege of his friendship, as I had for a period of 28 years, his sterling character, as well as his great professional abilities have made a lasting impression. He had a quiet dignity of manner associated with infinite patience—qualities which endeared him to all his patients, both in hospital and in the large private practice he carried on for so many years. He never spared himself in the carrying out of any of his duties, and his special skill in midwifery, gained from much experience, often led fellow practitioners to seek his advice and assistance, which was always given ungrudgingly. For many years he took an active part in municipal affairs in Hanley, and was appointed a justice of the peace; further, he was chairman of the local Panel Committee under the National Health Insurance Act. He retired from practice in 1923, but until the end took the same keen interest in all matters connected with the medical profession. His latter years were shadowed by bereavement and an increasing loss of sight, but he bore his afflictions with fortitude and cheerfulness."

FREDERICK WILLIAM BENNETT, M.D. Lond., B.Sc. Manch.

WE have already recorded the death of Dr. Frederick Bennett at Leicester on Dec. 3rd at the age of 70. The following notice is contributed by two of his colleagues:—

Dr. Bennett studied medicine at Owens College. He became M.R.C.S. in 1883, M.B. Lond., with honours in medicine, in 1884, and M.D. a year later. After having held house appointments in Manchester hospitals, he started practice in Leicester, and his first appointment was hon. assistant physician to the infirmary. But he was attracted to what was then a new specialty, that of laryngology. A few of the larger hospitals were creating departments for the treatment of diseases of the throat, nose, and ear, but many of those who applied for such appointments did so only to get a footing on the hospital staff and resigned them as soon as possible for general surgery. As there was very little teaching to be had in this country, Bennett, like many others, went abroad and studied in Vienna. On his return he was made the first aural surgeon to the infirmary. He remained faithful to his choice and continued to hold this appointment for nearly 30 years.

The way of a pioneer is always difficult. The hospital provided instruments and accommodation (of a sort) for his out-patients, but no house surgeon attended and no nurse assisted. Bennett engaged one of the latter from outside at his own expense. Very few beds were at his disposal, an odd one here in a medical ward, there in a surgical, and scattered throughout the hospital. Only minor operations were permitted to the aural surgeon; tonsils and adenoids, polyp, and so forth. Any such as the opening of the mastoid bone were claimed by the general surgeon as his prerogative. It is a tribute to Bennett's skill, his energy, his personal charm, his relations with his colleagues, and his unfailing interest in his work, that when he retired from the active staff he left a department well equipped, greatly enlarged, and fully recognised as an important branch of the hospital practice. For many years he was a member and a constant attender at the meetings of the Section of Laryngology of the Royal Society of Medicine. When, after the war, foreign members were excluded, his sense of justice, always high, led him to resign. On that account he was not well known to the younger generation, but he will be remembered with the kindliest of feelings by the older men.

Bennett was a man of many and varied interests. He was keenly fond of music, a cycle of "The Ring" was a joy to him, and he played the 'cello in local orchestras. But he was also fond of science and 20 years after he qualified in medicine he took the degree of B.Sc. His great love was geology. He was, until his death, president of the section of geology in the Leicester Literary and Philosophical Society. Many holidays in Switzerland were spent in the study of glacial action, and he was the authority on the rocks of Charnwood Forest—that perpetual puzzle to geologists. In addition to all this he took his full share as a prominent citizen. Years ago he was a member of the school board. In 1891 he drew up the scheme for the training of teachers in elementary science, which was then just permitted to be taught in elementary schools, real pioneer work. As a coöpted member of the city museum and library committee he worked for years. As one of the earliest subscribers to the local university college, and as a member of its council, he worked hard to encourage it, as well as frequently supporting it financially. Such were his pleasures, real joys to him.

Mrs. Bennett died about three years ago. They leave two daughters.

A. L. McC.
A. V. C.

THOMAS VINCENT CAMPBELL, M.B. Edin.

Dr. T. V. Campbell, who died at Edinburgh on Dec. 16th, had retired from active missionary service in South India in 1920. Born at Londonderry in 1863, he graduated at Edinburgh in 1888 and was appointed medical missionary at Jammalamadugu, in the Cuddapah district of South India, two years later. Owing to ill-health he had to return to England for a time, but in 1912 he and his wife—formerly Dr. F. G. Longbottom, of Halifax—returned to India to take charge of a new hospital, founded in memory of Dr. Wardlaw Thompson, at Chikka Pallapura, where they together established a medical mission work as successful as that at Jammalamadugu. In 1908 Dr. Campbell was awarded the Kaisar-i-Hind Medal for public services. Mrs. Campbell survives her husband with a son and two daughters.

NOTES, COMMENTS, AND ABSTRACTS

RADIATION FROM WIRELESS VALVES.

By H. M. S. Turner, M.D., F.R.S. Edin.,
late examiner in physiology, cairo university.

In high-power wireless valves used for transmission the heat generated may be so great that ordinary glass is unable to withstand it. To overcome this difficulty the valves may be provided with a water-jacket or a highly refractory substance may be used instead of glass, with air cooling. In certain valves fused silica is used for this purpose. Valves of the latter type in use appeared to me to possess all the necessary factors for the production of X rays, to the passage of which fused silica would offer comparatively little opacity. I decided to expose some X ray films to the emanations from such valves. Eastman Kodak Duplitized films were used. Each was enclosed in its light-proof container and one film, in its container, was enclosed in an envelope made from thick sheet-lead on the front of which a cross had been cut out after the manner of a stencil. (Fig. 1.) In front of the others letters cut from sheet-lead were closely applied. (Figs. 2 and 3.)

In the early days of X ray apparatus an induction coil giving about a 12-inch spark was used with ordinary Crookes's tubes. The tubes I used then were about the size of a Jaffa orange and the induction coil was fitted with a spring contact-breaker such as is found on a "buzzer." At that time we knew nothing of the properties of the rays and had to learn the correct length of exposure by trial and error. The efficiency of such an apparatus may be judged when it is mentioned that exposures as long as two hours were sometimes given to skiagraph a chest. Fifteen minutes and half an hour were quite common.

As wireless transmission valves are not designed to produce X rays, it was decided to start with a minimum exposure of two hours, and to place the films at a distance of eight inches from the valves. Six valves in a "bank" were used for the experiment and during the exposure the voltage and milliampèrage were recorded and marked on each film. All the films were exposed simultaneously, and the time when the exposure was commenced was also recorded on the film after development—viz., at 10 hrs. 43 mins. P.M. The voltage during exposure was uniformly 4000 and the milliampèremeter reading was 160 to 170. I was informed that owing to a transformer being out of action the voltage was much lower than it should have been and that the normal reading would be about 18,000 v.

The results of the experiment will be seen from the accompanying films, which prove quite definitely not only that the valves are radio-active, but that the emissions appeared to be quite appreciable in quantity—so much so that the question of possible effect upon attendants arises. It is customary to protect the transmission gear by a safety-fence, provided with one or more gates giving access to the apparatus. These gates operate switches, so that if an individual passes through the gate whilst transmission is in progress the circuit is broken and the current is cut off. The fence does not allow approach nearer than about 15 or 16 feet and, as the effect of any radio-active emissions would vary inversely as the square of the distance, the cumulative effect, if any, may be small. Nevertheless, with an individual working constantly in the vicinity, even at a distance of 16 feet or over, the possibility is one to be borne in mind.

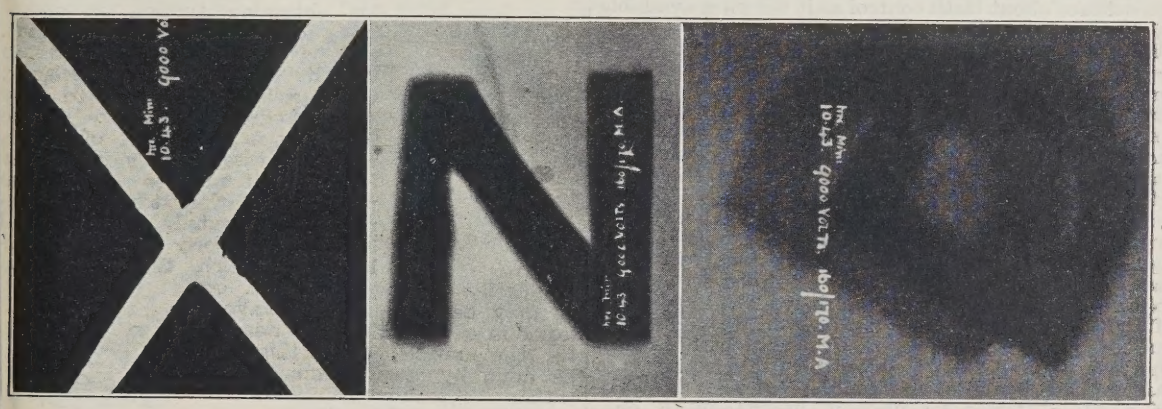
I was unable to get any history of erythema or any other indication of effect from the attendants I saw; but it should be realised that one does occasionally meet with individuals who are inclined to attribute many things to "wireless." For example, I remember many years ago in the days of the old rotary spark-gap that there was quite a common idea prevalent among the men that working near the spark-gap made them impotent—for which effect there could have been no possible cause. Had such a complaint been made by a man working in the vicinity of a bank of valves, such as those which produced the accompanying films, one might have given a certain amount of credence to it. For obvious reasons no leading questions were asked. Doubtless every new occupation will have its own peculiar diseases. Perfect protection would be given if the valves were screened with metal, or possibly even with lead glass screens of suitable proportions.

I am unable to give any information as to the precise nature of the emanations. I do not know their power of penetration, for I had no means at hand for measuring it; neither can I estimate the quantity, say, in terms of pastille doses. I simply desire to record the fact that skiagrams can be taken by the agency of such valves.

Although the exposures were made simultaneously under exactly the same conditions of distance, voltage, and milliampèrage—except as regards the length of exposure—each film was exposed to a different valve. Therefore any slight variations in the quality of the respective negatives may depend upon differences in the individual valves. Each valve has a very robust filament, which is heavily thoriated.

Some of the films (e.g., Fig. 3) show a double

FIGS. 1 2 3



Exposure 2 hours. 3 hours. 6 hours.

image. This is due to rays from an adjacent valve striking the film at an angle and giving a "localisation" effect. In the film showing the letter "N" the shadow of the string by which the sheet lead letter was supported can be seen.

THE PROTEASES OF PLANTS.

A PAMPHLET by Prof. S. H. Vines, intended to serve as a reply to R. Willstätter, has reached us.[1] The author's experiments, carried out during the years 1897–1910 upon the proteolytic enzymes of plants, led him to conclude that there existed two distinct enzymes; one was a protein-splitting enzyme or peptase which yielded albumoses and peptones, the other a proteose-splitting enzyme, comparable with Cohnheim's erepsin, which, acting on proteoses, converts these into amino-acids—notably, tryptophane. Willstätter contests this view, and considers the two digestive processes to be effected by one and the same protease or proteinase. Prof. Vines's argument is that it does not follow that a peptone-splitting erepsin may not occur in plants because no such enzyme can be certified in animals, and asserts that confirmation of his views will shortly be supplied by Prof. Nag, working at the Bose Research Institute, Calcutta.

BIRTH CONTROL: METHODS AND RESULTS.

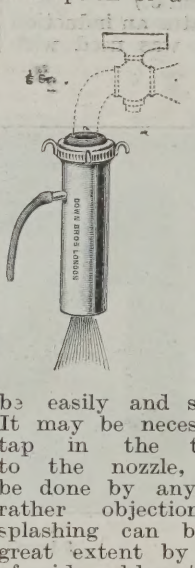
AT the Population Conference which met at Geneva in September, 1927, a group was formed with the object of collecting and impartially summarising every year information of statistical and medical importance about birth control as it becomes available in the course of each year. Contributions from different countries are edited by Dr. C. P. Blacker, who is honorary medical secretary of the Birth Control Investigations Committee. The third issue of the summary, which has recently appeared,[2] contains contributions from three countries—Denmark, Germany, and Great Britain—the last being much the fullest. In all three a description appears of the Gräfenberg ring. Dr. Gräfenberg himself describes his revised method in some detail, but does not analyse this now considerable accumulation of figures. Dr. Norman Haire states that only in three cases out of 200 were there untoward symptoms following the insertion of the ring. The experience of Dr. Leunbach (Denmark), however, does not bear out these favourable results. In a series of 177 cases, the ring fell out on 20 occasions. It descended as far as the external os in three and, though properly in position, failed to prevent pregnancy in one. Dr. Leunbach adds "moreover, the method is far from harmless. In many cases it has been necessary to remove the ring on account of metritis and parametritis or persistent bleeding from the uterus."

Certain interesting statistical results are reported from this country, which go to show how much the existing contraceptive methods leave to be desired. The results of Mrs. Florence's investigations at the Cambridge Women's Welfare Centre[3] are summarised in some detail. Among the most notable of her findings is the frequency of the failure of coitus interruptus among clinic patients. Thus, of the 118 patients who, before coming to the clinic, had made use of coitus interruptus, no less than 105 had found the method to fail. Among these 105 women there had been 409 pregnancies. Though these figures must not be taken as representing the success of coitus interruptus in the population as a whole (in so far as those who use the method successfully would not attend a birth control clinic), they are nevertheless significant. Statistical evidence is also adduced showing that much difference of opinion exists among medical authorities as to what is the optimum size of an occlusive pessary for normal women, and what is, on the whole, the most satisfactory make of pessary for average women. At the birth control clinics whose results are here reported the pessaries most used are the Mensinga and the Dumas. The prorace cervical cap is little used.

Interesting researches on chemical spermaticides and on the effects of these on the uterus and vagina of animals are summarised by Dr. Blacker in his report for Great Britain. Dr. J. R. Baker, working in the zoological laboratory of the University of Oxford, has shown that the assumption that because a given substance is a good germicide it is also a good spermaticide is wholly fallacious. Dr. H. C. Carleton and Dr. H. S. Florey have shown that most of the spermaticides on the market have no appreciable effect on the endometrium and vaginal mucous membrane of laboratory animals, even when applied in relatively large quantities. These investigators have also shown that the ascent of spermatozoa into the uterine cavity is accomplished through the intrinsic powers of locomotion of the spermatozoa rather than by the mechanical sucking action of the uterus itself.

A HYDROSTATIC PUMP ATTACHMENT.

Dr. G. A. Metcalfe has sent us an illustrated description of a modification which he has made, with the help of Messrs. Down Bros., Ltd., London, S.E. 1, in the hydrostatic pump supplied by them. He says: For some time past I have been using a hydrostatic pump for obtaining suction in operations on the nose and throat, and have been greatly impressed by its value and efficiency. One great drawback to the usual hydrostatic pump is the fact that a good head of water, which is essential for its proper function, tends to blow the pump off the tap. In the pump illustrated, four metal hooks have been brazed to the lead by which the pump can be easily and securely tied on. It may be necessary to have a tap in the theatre adapted to the nozzle, but this can be done by any plumber. The rather objectionable noise of splashing can be silenced to a great extent by fixing a length of wide rubber tubing to the outlet and allowing it to open under water in a basin.



OUR OLDEST SUBSCRIBER.

Sir Temulji Bhicaji Nariman, M.R.C.P. Edin., writes from Bombay to say that he has been a subscriber to THE LANCET for the last 61 years without intermission, an achievement which he regards "as a record, if not for England, at least for India." Sir Temulji, who was born in 1858, celebrated his jubilee in the medical profession eight years ago, and is planning to have a diamond jubilee in 1932.

AVERTIN IN OPHTHALMOLOGY.

IN an annotation with this title on p. 1357 of our last issue it was stated that the amount of avertin used "should never exceed 1·0 g. per kg. of body-weight." The quantity mentioned should have been ten times less—namely, 0·1 g. per kg.

THE Anglo-French Drug Company (238a, Gray's Inn-road, London, W.C. 1) have sent us a copy of their block diary for 1931, measuring 6 by 4½ inches, and showing a page to a day. It serves as a useful accessory to the writing table. The list of pharmaceutical products formerly attached to the inside of the front cover is not now included.

[1] The Proteases of Plants—a record and a reply. By S. H. Vines, F.R.S. London: Macmillan and Co., Ltd. 1930. Pp. 32. 1s.

[2] International Medical Group for the Investigation of Contraception. (Third issue.) Obtainable from the Hon. Mrs. Farrer, 13, Lansdowne-crescent, London, W. 6d.

[3] See THE LANCET, 1930, i., 919.

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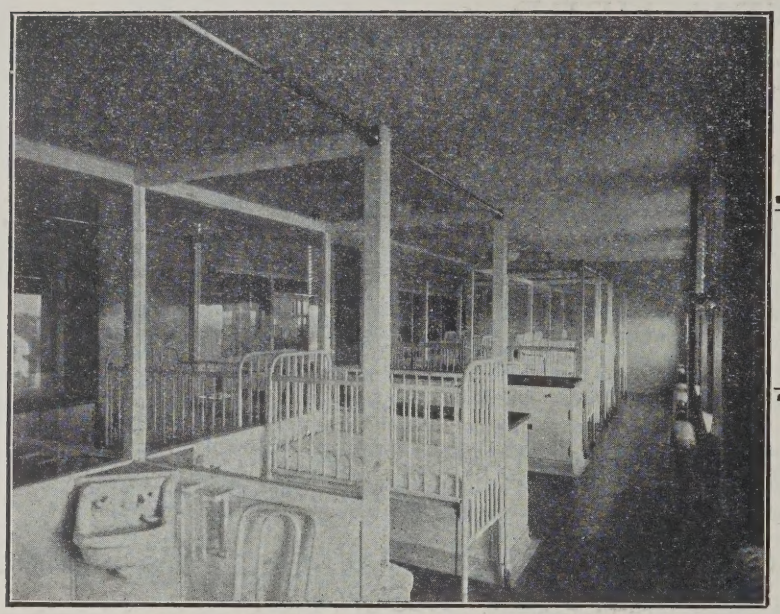

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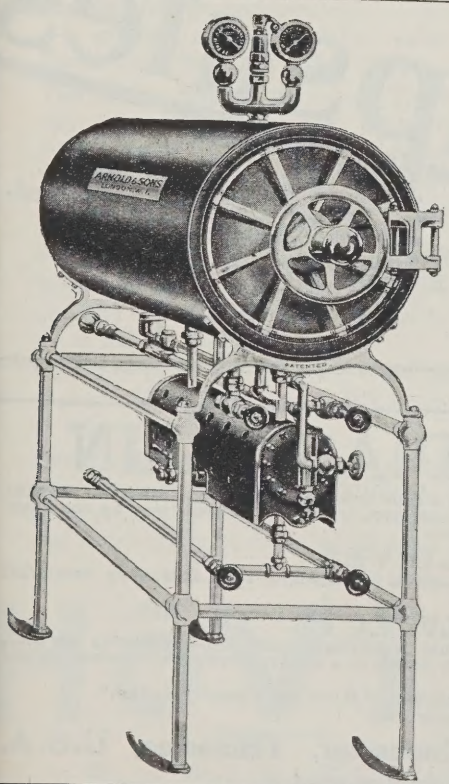

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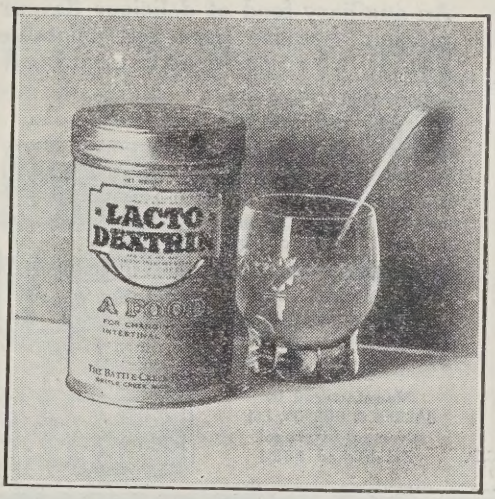

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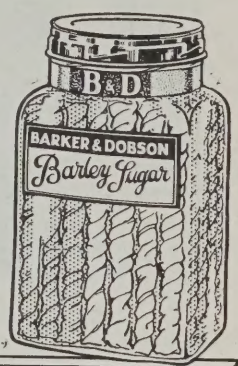

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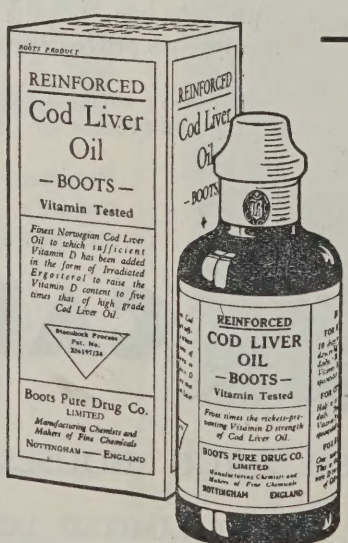
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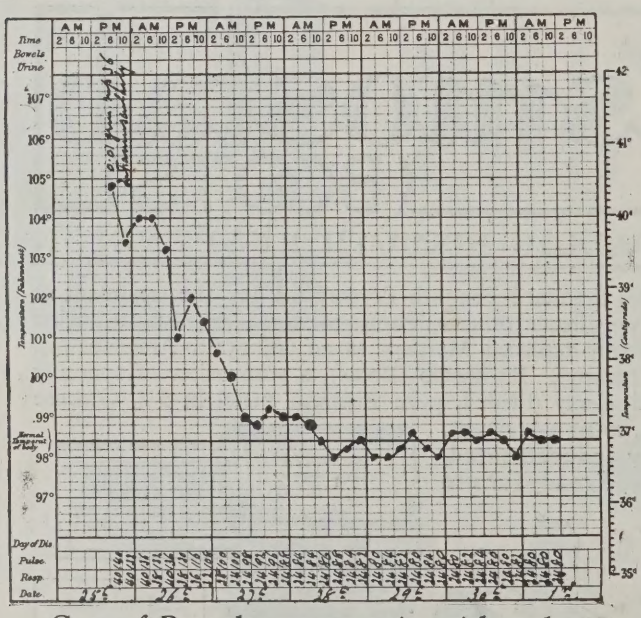

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(1) *Rentz, Eduard (University of Upsala): "Some Investigations into the Pharmacological Properties of Chlorophyll."*

(2) *Buergi (Berne University): Therapeut. Monats. Nos. 1 and 2—Deut. Med. Wochen., No. 35—Schweiz. Rundschau f. Med., No. 14.*

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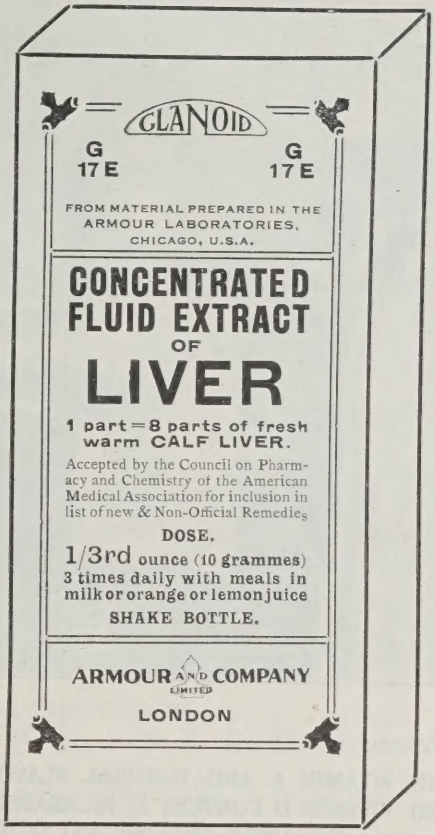
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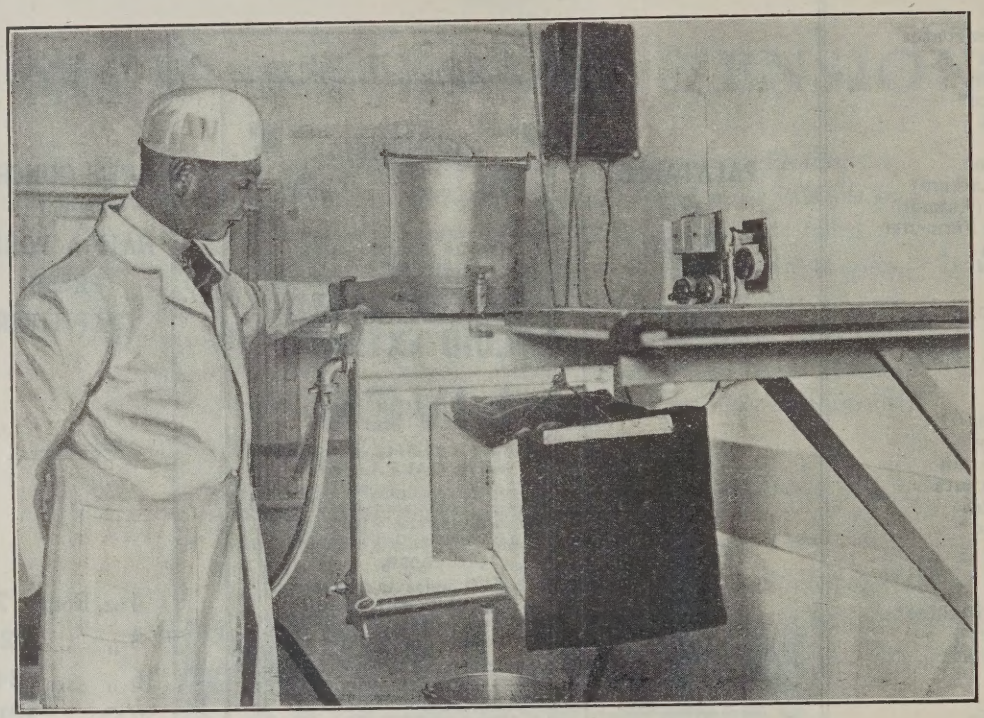

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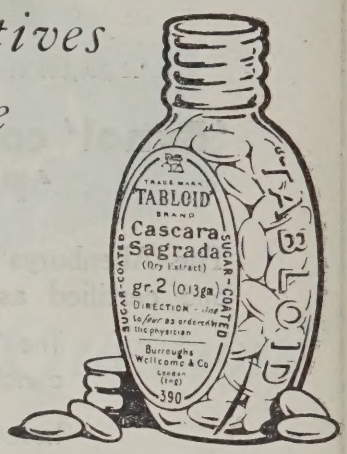

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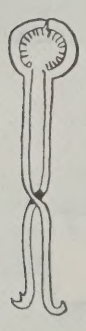
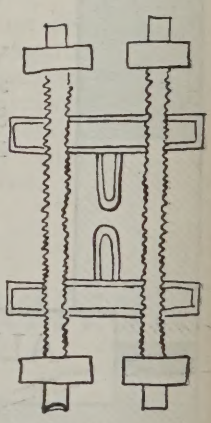
INSTRUMENTS REPRODUCED FROM A MANUSCRIPT WORK OF ALBUCASIS, THE GREATEST ARABIAN SURGEON.—Oriental repugnance to opening the body and drawing blood prevented the Arabs from contributing greatly to the progress of surgery. They used cauteries generally in place of the knife in cancer and other growths, in gangrene, for the opening of hepatic abscess, and in carious inflammation of the hip joint. They had for this purpose an extraordinary number of instruments. Albucasis, however, made a valiant effort to revive the practice of surgery, convinced that in this direction lay the chief possibility of new progress in medicine. In the great surgical treatise, from which the accompanying figures are drawn, and which was for a large part of the Middle Ages the leading text-book on the subject, he thus laments the neglect of surgery: "The operative art has disappeared from among us almost without leaving any trace behind. Only in the writings of the ancients do we find some references to it, but these, by bad translations, by errors and alterations, have become nearly unintelligible and useless." The instruments here figured are a pair of concave scissors for the removal of tonsils, and an obstetrical appliance.





DATE: Albucasis—A.D. c. 1000
The MS.—A.D. c. 1300

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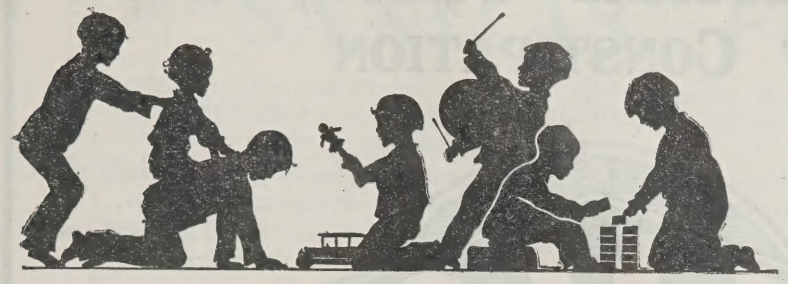

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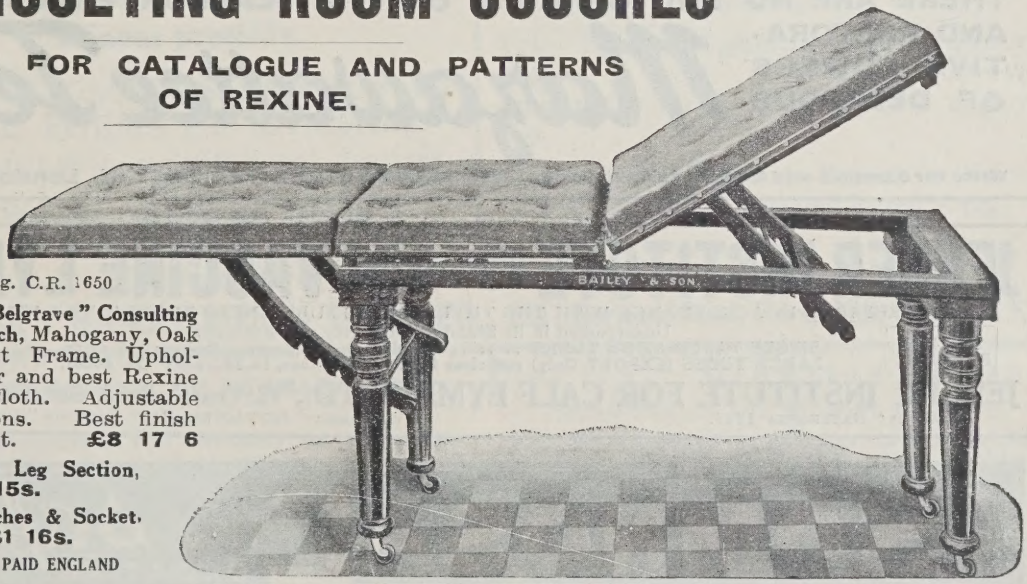

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Since the publication of the plans of the New Sanatorium in *The Lancet* and *British Medical Journal* in December, 1927, the Council, with the help of friendly criticism from various Medical friends, has reconsidered both the plans and the site. A retired but convenient site, which stands back a quarter of a mile from the main road, away from the noise of traffic, has been selected.

The revised plans, prepared by the Architects, Messrs. William A. Pite, Son and Fairweather, show a three-storey building instead of the former two-storey building. The ground and first floors accommodate patients, while the second floor is occupied by rooms for the nursing and domestic staff.

The Main entrance faces North and all wards face South, the long axis of the building being East and West.

This new plan has made it possible considerably to increase the floor space per bed in the wards, and also to add to the number of Bath rooms and Sanitary Annexes. The positions of the Minor Surgery Operating Room and the X-ray Room have been reversed, the former is now placed next to the Casualty Room in the Out-patient Wing, and the latter near the Entrance Hall.

In October last the Council decided that it was imperative to commence building at once, and tenders were called for. That of Mr. E. H. Smith, of Croydon, for £26,245 was accepted, and work was started on October 16th. By the terms of the contract the building is to be completed in June, 1931, which will allow time for the conversion of the Old Sanatorium to its new use as a House for 50 boys in September, 1931.

A sum of over £8,400 has been received towards the cost of the building, and the Council will welcome further donations from those who feel that a College so closely connected with the Medical profession should possess a Sanatorium worthy to be a model for all other Public Schools.

A donor of £10,000 may give his own name, or the name of any person whom he desires to commemorate, to the Main Sanatorium; a donor of £5,000 may do likewise to the Isolation Wing; while a large ward may be named for £3,000, or a small ward for £1,000, and a single bed for £100.

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The Ordinary Pensioners and the Foundation Scholars are elected by the Governors, voting by ballot, and having votes in proportion to the amount of their contributions. There is one election in the year, namely, in June. The Ordinary Pupils, the majority of whom are sons of Medical Men, pay fees which cover the entire cost of their board and education.

A sum of close upon £9,000 is required annually to maintain 50 Foundation Scholars and 50 Pensioners, yet this leaves much destitution in the profession untouched. The Council earnestly plead for more and larger subscriptions, so that they may extend the work to the relief of this distress. The profession and the public are therefore asked to make the Royal Medical Foundation attached to the College a refuge in time of trouble for all those members of a great profession and their children who fall on evil days.

Donors of 10 guineas, and collectors of 20 guineas, are Life Governors of the College; Subscribers of one guinea annually are Governors during the continuance of their subscriptions.

J. BERNARD LAMB, Secretary.

Office: 49, Bedford-square, W.C. 1.

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For terms and further particulars apply to the Medical Superintendent (TELEPHONE: No. 56 Northampton), who can be seen in London by appointment.

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FOR NERVOUS AND MENTAL DISORDERS,

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Station: EDEN PARK (Southern Railway).
Telephone: SPRINGPARK 1180–1181

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Physician-Superintendent: J. G. PORTER-PHILLIPS, M.D., F.R.C.P.

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Every facility for specialised investigation and treatment is provided in the Lord Wakefield Science and Treatment Unit. In this Unit is found the X-Ray and Dental Departments, and the Bio-Chemical, Pathological and Psychological Laboratories.

Furthermore provision is made for Electro-Therapy and Hydro-Therapy to be carried out in all their forms.

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For forms and further particulars apply to the Physician-Superintendent at the Hospital.

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Particulars from the Medical Superintendent.

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A REGISTERED HOSPITAL FOR THE CARE AND TREATMENT OF LADIES AND GENTLEMEN SUFFERING FROM NERVOUS AND MENTAL DISORDERS.

Within two miles of the G.W. Railway and L.M. & S. Railway Stations at Gloucester, the Hospital is easily accessible by rail from London and all parts of the United Kingdom. It is beautifully situated at the foot of the Cotswold Hills, and stands in its own grounds of over 280 acres. Voluntary Boarders of Both Sexes are also received for treatment.

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For particulars as to terms, &c., apply to ARTHUR TOWNSEND, M.D., Resident Superintendent.

Telephone: No. 7 Barnwood.

Telegraphic Address: "Relief, Old Catton." Telephone: 290 Norwich.

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Ladies only received.

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For full particulars apply to the Misses MCLINTOCK, or to Dr. S. BARTON, 34, Surrey-street, Norwich, Visiting Physician.

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HOSPITAL FOR MENTAL DISORDERS.

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For terms, &c., apply to the Medical Superintendent, J. A. C. ROY, M.B., who may be seen in Manchester by appointment. Telephone: GATLEY 2231 (3 lines).

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Telegrams: "Alleviated, London." Telephone: Rodney 4741 and 4742

The above House, which was established in 1826, is an Institution for the care and treatment of persons suffering from mental diseases and nervous disorders. Both certified patients and Voluntary Boarders are received. Separate houses for treatment and accommodation of special cases adjoin the Institution. There is a seaside branch, Kearsney Court, near Dover, to which patients may be sent for treatment or on holiday. Motor and carriage exercise is provided as required. Patients can avail themselves of a course of physical drill. Tennis courts. Entertainment, dances and indoor amusements held throughout the year.

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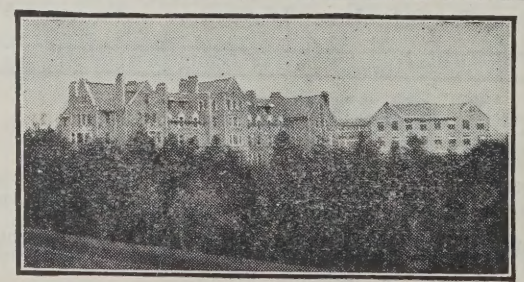

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SPECIAL ACCOMMODATION FOR PAYING PATIENTS.
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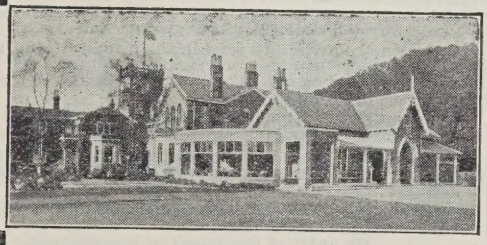

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For the treatment of Gentlemen under the Act and privately. Established 1863 by an association of prominent medical men and others for the study of inebriety; profits, if any, are expended on the institution. Large secluded grounds on the banks of the river Colne. Full-sized billiards, tennis, croquet, bowls. Golf (Moor Park and Sandy Lodge) close by.—Apply to F. S. D. HOGG, M.R.C.S.,&c., Res. Med. Supt.

ALCOHOLISM, DRUG HABIT and NEURASTHENIA.

BAY MOUNT, PAIGNTON.

Ladies and Gentlemen treated in small Private Home.
EXCELLENT RESULTS FROM MODERN TREATMENT.
SPLENDID CLIMATE. AMPLE AMUSEMENT
MODERATE INCLUSIVE TERMS.
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FUNCTIONAL NERVOUS DISORDERS ALCOHOLISM and DRUG ADDICTION

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This Mansion has been opened upon the most modern and scientific lines both physical and mental.
Resident Medical Superintendent—
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THE HARE NURSING HOME

As founded and established by the late Dr. FRANCIS HARE, for 20 years Med. Supt. of The Norwood Sanatorium, and author of "Alcoholism," etc.; for the treatment of ALCOHOLISM, other Drug Habits, Insomnia, Neurasthenia, Functional Nervous Disorders, TROPICAL Ailments, etc.

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Terms Moderate. Quiet and pleasant situation.
Ladies and gentlemen admitted for treatment.
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Beautifully situated 600 feet above sea level. Facing South, completely sheltered from North and East.
21 miles from Edinburgh.

All modern Baths, Douches, Massage and Electrical Treatment, Ultra-violet Radiation. Physician in Attendance.

IDEAL HEALTH RESORT.

Electric Light, Central Heating, Electric Lift, Three Billiard Tables, Ball Room, Winter Garden, Swimming Bath, Hard and Grass Tennis Courts, Badminton, Croquet Lawn, Golf Course.

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PATIENTS (GENERAL AND MATERNITY) RECEIVED INTO THE HOME.
ALSO FEW ROOMS FOR PERMANENT INVALIDS.

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Infants and Children (well or ill). Town-roof Playground. Country if desired. Each department separately staffed, and self-contained.

ALL NURSES STATE REGISTERED.

Farm: SKERME ACRES, STANWELL MOOR, MIDDLESEX. Convalescents and Visitors.

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Miss PURDY, Cert. London Hospital, C.M.B. Miss CLARA PURDY
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THE ART OF RELAXATION

THE ARCHER NERVE TRAINING COLONY, LANGLEY RISE, LTD., King's Langley, Herts

Is opening premises for Consultations, Treatments, and Classes at 22, UPPER GLOUCESTER PLACE, N.W.1. (Tel: Padd. 7175), on Wednesdays and Saturdays, 10-1, and 2-5.30. Enquiries on all other days to King's Langley (Tel: 19).

Grove House, All Stretton, Church STRETTON, SHROPSHIRE.

A PRIVATE HOME for the care and treatment of a limited number of Ladies Mentally Afflicted.
Climate healthy and bracing.
Apply to Dr. McClintock, Proprietor and Resident Medical Superintendent.

English Lady, having Sunny Villa

on French Riviera, with running hot and cold water in bedrooms and central heating, would take paying guests.

In cases of convalescents (not consumptives) special attention given to diet if necessary.

Terms from 5 guineas weekly.

Miss VALENTINE, Villa Ton Cigaloun, Chemin des Sables, Juan-les-Pins, S. France.

Wanted, Good home in the country,

within thirty miles of Manchester, for gentleman of childish intellect, aged 68 years. No large institution need apply. State conditions and moderate terms.—Reply, Box 238, Wheeler's Advertising Agency, Manchester.

The Prince of Wales's General HOSPITAL, London, N.15.

ASSISTANT PATHOLOGIST.

Applications are invited from fully qualified registered Medical Practitioners for the whole-time appointment of Assistant Pathologist.

Commencing salary £200 per annum.

Some experience in all branches of Pathology essential.

Applications, stating age, experience, and qualifications, together with copies of three recent testimonials, should be sent to the undersigned on or before Thursday, January 1st, 1931.

J. C. BURDETT, Director.

Hospital of St. John and St. Elizabeth,

60, Grove End-road, N.W.8.—Applications are invited for the post of RADIOLOGIST. Applications, with copies of three recent testimonials, should be sent to the undersigned at the Hospital on or before 30th inst. Further particulars may be obtained from the Secretary.

F. DUDLEY HOBBS, B.A., Secretary.

National Hospital, Queen-square,

For the Relief and Cure of Diseases of the Nervous System, including Paralysis and Epilepsy.

HONORARY ASSISTANT SURGEON. The Board of Management invite applications from Fellows of the Royal College of Surgeons for the post of Honorary Assistant Surgeon.

Applications should be sent to the undersigned on or before January 5th, 1931. The rules of the appointment will be forwarded on request. GODFREY H. HAMILTON, Secretary.

National Hospital, Queen-square, London, W.C.1.

National Hospital, Queen-square,

For the Relief and Cure of Diseases of the Nervous System, including Paralysis and Epilepsy.

HONORARY SURGICAL ASSISTANT. The Board of Management invite applications from Fellows of the Royal College of Surgeons for the appointment of Honorary Surgical Assistant. The post is tenable for one year, and the holder is eligible for re-election for a second year.

Applications should be sent to the undersigned on or before January 5th, 1931. The rules of the appointment will be forwarded on request. GODFREY H. HAMILTON, Secretary.

National Hospital, Queen-square, London, W.C.1.

The Hospital for Sick Children,

Great Ormond-street, London, W.C.1.

A Part-time JUNIOR CASUALTY OFFICER is required on the 9th January, 1931, to assist in the Casualty Department from 10 A.M. to 3 P.M. (Saturdays 10 A.M. to 1 P.M.), under the direction of the Casualty Officer.

The work of this Officer includes a large number of tonsillectomies and other minor operations.

Candidates must be registered Medical Practitioners, and have held a responsible Hospital appointment.

Gentlemen are invited to send in their applications, addressed to the Secretary, before 12 o'clock on Monday, 5th January, 1931, accompanied by copies of not more than three testimonials written specially for the purpose.

The appointment is made for six months, and is non-resident.

Salary at the rate of £150 per annum, with luncheon.

All candidates must be in attendance to appear before the Joint Committee, if required, at their meeting on Wednesday, 7th January, 1931, at 4.45 P.M. precisely.

Forms of application and copies of the rules may be obtained from the Secretary, at the Hospital.

By order of the Board of Management.
December, 1930. JAMES MCKAY, Secretary.

County Council of Middlesex.

The County Council invites applications from duly qualified medical practitioners for the undermentioned appointments:—

DISTRICT MEDICAL OFFICER, Tottenham (High Cross).

Salary £180 per annum. The Officer appointed will be required to carry out his duties in accordance with the Public Assistance Order, 1930, of the Minister of Health, to reside in the district, and to name to the Council some duly qualified medical practitioner who will, in the case of his absence or other hindrance to his personal attendance, act in his place.

PUBLIC VACCINATOR, Tottenham (High Cross).

The person appointed will be required to produce to the Council a certificate of proficiency in vaccination, unless such certificate was required as a condition of obtaining any diploma, licence or degree which he possesses.

He will be required also to enter into a contract with the Council in accordance with the Vaccination Order, 1930, of the Minister of Health. The contract will provide for the payment of the minimum fees laid down in the Order.

Applications, stating (1) name, (2) age, (3) qualifications and experience, accompanied by copies of not more than three recent testimonials, must be received by the undersigned not later than 10th January, 1931.

No special application forms are provided. Envelopes must be endorsed "District Medical Officer" or "Public Vaccinator," as the case may be.

Canvassing, directly or indirectly, will be a disqualification.

ERNEST S. W. HART, Clerk of the County Council.

Guildhall, Westminster, S.W.1., 18th December, 1930.

Rotherham Hospital.—Wanted,

HOUSE PHYSICIAN (Male), qualified. Salary £180 p.a., with board, residence, and laundry; to have charge of Out-patients, administer anæsthetics, and assist Honorary Physician.

Applications, with copies of recent testimonials, to be sent to the Secretary, G. W. ROBERTS, 8, Moorgate-street, Rotherham.

INDIAN MEDICAL SERVICE

RECRUITMENT OF EUROPEAN OFFICERS

Applications are invited from Medical Men for permanent commissions in H.M.'s Indian Medical Service. The Terms offered include a gratuity of £1,000 on retirement after six years' service or £2,500 after 12 years' service, together with free return passages for those who no longer desire to remain in the Service. In other respects the terms will be as detailed below.

Candidates must be British subjects under 32 years of age at the time of application and must be registered under the Medical Acts in force in Great Britain and Northern Ireland.

CAREERS.

The Indian Medical Service offers wide opportunities of medical experience, including clinical, preventive, specialist, and research work. At the beginning of his career an officer is employed on the military side which has medical charge of the Indian Army. Promotion is on a time scale up to the rank of Lieutenant-Colonel, and by selection to the ranks of Colonel and Major-General. An officer may apply after one year's Indian Service to have his name registered for transfer to the civil side, from which appointments are made to Civil Surgeoncies, which are established at the principal civil centres to provide for the medical needs of Civil Officials and for general medical administrative purposes; to specialist (e.g., Public Health and Bacteriological) services; to research posts; and to professorships at the Medical Schools.

PAY.

The monthly rates of pay for European officers in the Service who have a "non-Asiatic" domicile are as follows:—

Rank.	Service in Rank.	Basic Pay.	Overseas Pay.	Year of Total Service.
1	2	3	4	5
		Rs.		
Lieut...	—	500	Rs.150	1st
			150	2nd
			150	3rd
Capt...	(i) During first 3 years' service as Captain ..	650	150	4th
			£15	5th
			15	6th
	(ii) With more than 3 and less than 6 years' service as Captain	750	25	7th
			25	8th
			25	9th
	(iii) With more than 6 years' service as Captain	850	25	10th
			25	11th
			30	12th
Major ..	(i) During first 3 years' service as Major ..	950		
	(ii) With more than 3 and less than 6 years' service as Major	1100		
	(iii) With more than 6 years' service as Major..	1250		
Lt.-Col.	(i) Until completion of 23 years' total service ..	1500	30	13th and over.
	(ii) During 24th and 25th years' service	1600		
	(iii) After completion of 25 years' total service ..	1700		
	(iv) When selected for increased pay	1850		

Extras.—In addition to the above rates various allowances are admissible for a large number of special appointments on both the military and the civil side which may be held by members of the Indian Medical Service. Special high rates of pay are also attached to the numerous administrative appointments open to officers in both branches of the Service.

ANTEDATES IN COMMISSION.

Any service rendered by an officer during the War as a medical or combatant officer or in a position usually filled by an officer may be counted as service for increments of pay, promotion, retirement and retired pay, but not for gratuity.

One half of any service in the ranks during the War may be counted as service for retirement and retired pay only.

Candidates possessing certain higher medical qualifications may be granted an antedate of one year in their commissions. Past service in certain hospital appointments may also render candidates eligible for an antedate of one year. Persons holding or about to hold resident posts at recognised hospitals may be seconded in those posts for a period not exceeding one year. The maximum period of antedate, secondment, or antedate and secondment combined, admissible under this paragraph, is limited to one year.

OUTFIT ALLOWANCE.

Officers on appointment will receive an outfit allowance of £50.

PRIVATE PRACTICE.

With the exception of Administrative Officers, military or civil, and officers holding certain special appointments, officers are not debarred from taking private practice, so long as it does not interfere with their proper duties.

LEAVE.

Leave can be taken at reasonable intervals, and adequate rates of leave pay are provided. Extra leave (known as study leave), which may not exceed 12 months in all during an officer's service, may be granted to officers desirous of pursuing special courses of study of a post-graduate nature. During such leave, study allowance, at present fixed at the rate of 12*s.* a day in the United Kingdom, £1 a day on the Continent of Europe, and £1 10*s.* a day in the United States of America, is granted to an officer in addition to ordinary rates of leave pay.

PENSIONS.

The rates of pension are as follows:—

	Per annum.
After 17 years' service for pension ..	.. £400
,, 18 ,, ,, ..	.. 430
,, 19 ,, ,, ..	.. 460
,, 20 ,, ,, ..	.. 500
,, 21 ,, ,, ..	.. 540
,, 22 ,, ,, ..	.. 580
,, 23 ,, ,, ..	.. 620
,, 24 ,, ,, ..	.. 660
,, 25 ,, ,, ..	.. 700
,, 26 ,, ,, ..	.. 750
,, 27 ,, ,, ..	.. 800

These rates are subject to alteration on account of a rise or fall in the cost of living as compared with the year 1919, to an extent not exceeding 20 per cent. in all, the revision being undertaken triennally. With effect from July 1st, 1930, a reduction of 5¼ per cent. has been made on this account from the amounts shown.

There are additional pensions ranging from £65 to £350 per annum for officers who have held administrative appointments.

PASSAGES.

An officer on appointment is provided with free passage to India. The wives and families of officers who are married prior to the date of the officers' embarkation on first appointment will also be provided with free passage to India subject to the payment of messing charges.

Officers and their families are also eligible for passage concessions under which they are granted a certain number of return passages home at Government expense during their service.

INSTRUCTION PRIOR TO EMBARKATION.

Officers are required to undergo courses of instruction at the Royal Army Medical College and at Aldershot, lasting approximately six months, prior to their embarkation for India on first appointment.

Full details regarding these appointments and forms of application may be obtained from the UNDER-SECRETARY OF STATE FOR INDIA, MILITARY DEPARTMENT, INDIA OFFICE, LONDON, S.W.1.

The Selection Committee will meet at the India Office early in January next, and the selected candidates will be required to join a course of instruction commencing early in February, 1931, prior to sailing for India in the Autumn of 1931.

Applications should be submitted as soon as possible.

Chesterfield and North Derbyshire ROYAL HOSPITAL.

(190 Surgical and Medical Beds.)

HOUSE SURGEONS.

Applications are invited from fully qualified Men for the above posts.

The appointments are for six months.

Salary from £100 to £175 per annum, according to experience, with board, apartments, and laundry.

Applications, stating age, together with copies of three recent testimonials, should be sent to the undersigned on or before the 31st instant. G. SUNNUCK,

15th December, 1930. Superintendent and Secretary.

Swansea County Borough.

LADY ASSISTANT MEDICAL OFFICER.

The Swansea Borough Council invite applications from duly qualified and experienced Women Medical Practitioners (unmarried) for the post of Assistant Medical Officer, to assist with the medical services of the Corporation. Hospital Resident and special experience in diseases of women (antenatal and obstetrics) and young children, school medical service work, are desirable qualifications. Salary £600 per annum. Form of application and list of duties can be obtained from Dr. THOMAS EVANS, Medical Officer of Health, Public Health Office, Swansea. Applications must be received not later than January 2nd, 1930.

West Suffolk General Hospital,

Bury St. Edmund's.

108 beds.

JUNIOR RESIDENT MEDICAL OFFICER required on the 1st January, 1931. Salary £150 per annum, with board, residence, and laundry.

Applicants must be fully qualified and registered.

Applications, giving particulars of experience, and enclosing copies of three recent testimonials, to be sent to the undersigned.

December, 15th, 1930. E. E. HARDWICKE, Secretary.

Harlow Wood Orthopædic Hospital,

near Mansfield, Notts.

Applications are invited for the post of RESIDENT SURGICAL OFFICER. The appointment will be for twelve months in the first instance, at a salary of £275 (with board, residence, and laundry). The selected candidate will be eligible for re-election for a further period of a year, at the salary of £300. Applicants should have had surgical experience, and preferably some special experience of Orthopædic Surgery. The Hospital is a central Orthopædic Hospital, treating both children and adults, and serving a large area in the East Midlands.

The duties, which include assistance at the associated Outpatient Clinics, will commence on 1st March, 1931.

Applications, stating age and qualifications, with copies of recent testimonials, should reach the Secretary on or before Monday, 19th January, 1931.

The Royal Infirmary, Sheffield.

(500 Beds.)

The Weekly Board of Management invite applications for the post of OPHTHALMIC HOUSE SURGEON.

The salary attached to the appointment is at the rate of £80 per annum for the first six months, and £100 per annum afterwards.

There are 68 ophthalmic beds, and the post offers exceptional opportunities of gaining experience in Ophthalmology.

Applications, with copies of testimonials, to be sent to the undersigned forthwith. JNO. W. BARNES, F.C.I.S.,

General Superintendent and Secretary.

Board Room, 17th November, 1930.

The Royal Infirmary, Sheffield.

(500 Beds.)

The Weekly Board of Management invite applications for the undermentioned posts:—

HOUSE PHYSICIAN.

HOUSE SURGEON.

ASSISTANT AURAL AND OPHTHALMIC HOUSE SURGEON.

ASSISTANT CASUALTY OFFICER.

The appointments will be tenable for six months from 1st January, 1931. The Salary attached to each post is £80 per annum, rising after six months' service to £100 per annum, together with board and residence. Applications, together with copies of testimonials, to be sent to the undersigned immediately.

JNO. W. BARNES, F.C.I.S.,

General Superintendent and Secretary.

Board Room, 27th November, 1930.

Nottingham General Dispensary.

(Branch.)

Wanted, RESIDENT LADY SURGEON. Must have Medical and Surgical qualifications. Salary £250, with £25 increase per year up to £300. Apartments (not board), attendance, lights, and fuel. This Institution is a non-provident one. No beds. No midwifery. Preference given to anyone experienced in Heliotherapy.

Applications, stating age, and accompanied by recent testimonials, to be sent by 14th January, 1931.

5, Thurland-street, Nottingham. R. J. WILLATT, Secretary.

Warneford General Hospital,

Leamington Spa.

RESIDENT HOUSE PHYSICIAN Required. Salary at the rate of £165 per annum, with board and laundry. Applications and copies of testimonials, from qualified and registered Medical Practitioners, should reach the undersigned not later than 18th January, 1931. W. RUSSELL RUDALL,

House Governor and Secretary.

Warneford General Hospital,

Leamington Spa.

RESIDENT HOUSE SURGEON required. Salary at the rate of £165 per annum, with board and laundry. Applications and copies of testimonials should reach the undersigned, not later than 18th January, 1931. W. RUSSELL RUDALL,

House Governor and Secretary.

Swansea Hospital. (316 Beds.)

SENIOR RESIDENT OFFICER Wanted, Gentleman, single, experienced. Duties to include that of House Surgeon to the Honorary Gynæcologist.

Salary £300 per annum, rising by annual increments of £50 to £500 per annum, with board, residence, and laundry.

Applications, stating age, nationality, qualifications, and experience, together with copies of three recent testimonials, to be forwarded to the undersigned. O. C. HOWELLS, Secretary.

General Hospital, Nottingham.

Wanted, a HOUSE SURGEON. Appointment for six months. Salary at the rate of £150 a year, with board, residence, and laundry. Applications, stating age, qualifications, and experience, together with copies of testimonials, to be sent to the undersigned not later than Monday, January 5th, 1931. Duties to commence on or about January 13th, 1931.

PETER M. MACCOLL, House Governor and Secretary.

Hertford County Hospital.

Applications are invited for the post of HONORARY ASSISTANT SURGEON (a former Resident Surgical Officer will be an applicant).

Candidates should possess a degree in Surgery of a British University or the Fellowship of one of the Royal Colleges of Surgeons.

Applications, together with copies of testimonials, should be made by Monday, 5th January, 1931, to the undersigned.

PERCY G. BROOKS, Secretary.

Hertford County Hospital.

Applications are invited for the post of HOUSE PHYSICIAN (Male). Salary £150 per annum, with board, residence, and laundry. The appointment is for six months in the first instance.

Applications, with copies of three recent testimonials, should be sent to the undersigned not later than Monday, 5th January, 1931. PERCY G. BROOKS, Secretary.

The Jessop Hospital for Women,

Sheffield. (145 Beds.)

Gynæcological and Maternity Departments.

The Board of Management invite applications for the appointment of Three ASSISTANT HOUSE SURGEONS (Male), for six months from January 15th, 1931.

Salary £100 per annum, together with board, residence, and laundry.

Applications, stating age, together with copies of recent testimonials, should reach the undersigned on or before January 5th.

H. B. SHELSWELL, Secretary.

Weston-super-Mare General Hospital.

(80 Beds.)

HOUSE SURGEON.

Applications are invited for the post of Resident House Surgeon at this Hospital for a period of six months. Salary at the rate of £150 per annum, with board, rooms, and laundry. Duties to commence 1st January next. Applications, stating age and qualifications, and enclosing copies of testimonials, should be addressed to the undersigned.

LESLIE J. FURSLAND, Secretary.

Royal Sussex County Hospital,
Brighton. (238 Beds.)

HOUSE SURGEON (Male) required 1st February, 1931, with charge of beds, part casualties, and anæsthetics. Salary £150 per annum, with board, residence, and laundry.

Candidates must hold medical and surgical qualifications of the British Empire, and be duly registered under the Medical Acts. They must be unmarried, and when elected under thirty years of age.

Applications, with copies of testimonials, should reach the undersigned not later than the 19th January, 1931.

L. L. W. LANCASTER-GAYE, Secretary-Superintendent.

Victoria Hospital, Burnley. (120 Beds.)

TWO HOUSE SURGEONS (MALE).

Applications are invited for the above posts, which become vacant on the 1st of January next. These appointments are for six months in the first instance, and carry a salary of £150 per annum, with board, &c. This Hospital is approved by the London University for the purpose of the M.B. and M.S. examinations.

Applications, giving full details of qualifications and experience, and accompanied by testimonials, should be addressed to the undersigned forthwith. GEO. W. COOLING,

28th November, 1930. Secretary-Superintendent.

Liverpool Sanatorium.

DELAMERE FOREST, FRODSHAM.

The Committee invite applications for the post of ASSISTANT to the MEDICAL SUPERINTENDENT at the Sanatorium (175 beds), at a salary of £250 per annum, with board and residence. Candidates must be fully qualified.

Applications, with copies of three recent testimonials, to be sent in sealed envelopes, marked "Medical," not later than 3rd January, 1931, to the Medical Superintendent, Liverpool Sanatorium, Delamere Forest, Frodsham.

Hull Royal Infirmary,
Sutton Branch.

The above Branch will be opened in February next, and will be a self-contained modern General Hospital of 100 beds. There will be two Resident posts.

Applications are now invited for the post of HOUSE PHYSICIAN (Male), at a salary of £160 per annum, plus board, residence, and laundry. The appointment will be for six months in the first instance, and will be terminable by one month's notice on either side.

Applications, stating age, qualifications, and nationality, and with copies of testimonials, should be sent to the undersigned.

November 22nd, 1930. R. J. CARLESS, House Governor.

Wrexham and East Denbighshire
WAR MEMORIAL HOSPITAL. (109 Beds.)

Two RESIDENT HOUSE SURGEONS required at above Hospital, to commence on February 1st. Appointments for a period of not less than six months. Salaries £150 per annum, with board and laundry.

Applications, stating age, nationality, experience, and qualifications, accompanied by copies of three recent testimonials, to be sent to the undersigned, not later than Monday, January 12th, 1931. LESLIE SPENCER, Secretary.

December 16th, 1930.

The Otago Hospital Board,
Dunedin, New Zealand.

Applications will be received by the undersigned until February 19th, 1931, for the position of RADIO-THERAPEUTIST, Dunedin Hospital, at a salary commencing at the rate of £1000 per annum, rising by annual increments of £50 each to a maximum salary at the rate of £1250 per annum, and £100 travelling allowance.

Full details of duties obtainable on application to the High Commissioner for New Zealand.

JOHN JACOBS, Secretary.

Otago Hospital Board, Dunedin, New Zealand.

14th November, 1930.

David Lewis Northern Hospital,
Liverpool.

The Committee invite applications for the undermentioned posts:—

(*a*) HONORARY MEDICAL OFFICER-IN-CHARGE of Ear, Nose, and Throat Department.

(*b*) HONORARY MEDICAL OFFICER-IN-CHARGE of Dermatological Department.

Applications, together with copies of testimonials, should be sent to the undersigned on or before Saturday, 31st January, 1931. THORNBURROW GIBSON, M.A.,

Secretary-Superintendent.

Poplar Hospital for Accidents, East
India Dock-road, Poplar, E. 14.

The Committee invites applications for the appointment of SECOND RESIDENT OFFICER at a salary at the rate of £175 per annum, all found. Candidates must have held appointments as House Surgeon at a Hospital. Applications must be accompanied by a statement of the candidates' qualifications, and be forwarded to the Secretary, with three recent testimonials, not later than Monday, January 5th, 1931 The appointment is for a period of six months.

Locum Tenens for Clinical Pathologist
wanted from January 12th to March 31st, living in, with special laboratory experience. 7 gns. weekly. Apply at once in writing, stating age, medical qualifications, and experience, with copies of testimonials, to Physician Superintendent, Crichton Royal Mental Hospital, Dumfries.

Nelson Hospital, Merton, S.W. 20.

RESIDENT MEDICAL OFFICER (Male), fully qualified, wanted at once. Small General Hospital, 62 beds. Majority of work surgical. Appointment for six months in first instance. Salary at rate of £100 per annum, all found. Comfortable quarters provided near Hospital. Further particulars may be obtained from the Hon. Secretary. Applications, with copies of two recent testimonials, should be sent to the Hon. Secretary.

Wallasey Victoria Central Hospital,
Wallasey.

Applications are invited for the position of JUNIOR HOUSE SURGEON (Male). Salary at the rate of £100 per annum, with board, residence, and laundry. Candidates chosen would be appointed for six months. Duties include Dispensary, Out-patients, and some Home visiting.

Applications, with copies of recent testimonials, to be sent to the Secretary not later than 5th January, 1931.

Worcester County and City Mental
HOSPITAL, Powick, near Worcester.

JUNIOR ASSISTANT MEDICAL OFFICER (Male), single, required. Candidate must be duly qualified in medicine and surgery. Salary £350 per annum, rising by two annual increments of £25 to £400 per annum, together with furnished apartments, board, laundry, and attendance.

The appointment is subject to the provisions of the Asylums Officers' Superannuation Act, 1909. Applications, stating age and full particulars, together with copies of three recent testimonials, to be forwarded to the Medical Superintendent not later than Friday, January 9th, 1931.

Wallsall General Hospital.

The Committee invite applications from Men for the post of HOUSE SURGEON. Salary £150 per annum. Candidates, who must be registered under the Medical Acts, must produce three recent testimonials. The appointment will be for six months. The Hospital contains 100 beds, and is equipped in all Special Departments. Applications, stating age, qualifications, and nationality, must be received by the undersigned immediately.

7th December, 1930. WALTER FRANCOMBE, Secretary.

For Locum Tenens
APPLY TO

Mr. PERCIVAL TURNER, LTD.,

the oldest and only Agent who for fifty years has supplied substitutes at short notice without fee to principals.

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Telephone: Temple Bar 9011.

After Office hours—'Phone: Epsom 9142.

First Division Football League Club
require MASSEUR. None but fully qualified applicants need apply. Opportunity will be given to work private Practice in conjunction. Applications, stating age, experience, and wages required, to—Address, No. 120, THE LANCET Office, 7, Adam-street, Adelphi, W.C.2.

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The salary will be at the rate of £750 per annum.

The appointment will commence at an early date and will be subject to a medical examination and to the provisions of the Council's Superannuation Scheme.

Applications, endorsed "Assistant Medical Officer of Health," and accompanied by copies of not more than three recent testimonials, must be received by the undersigned not later than the first post on January 10th, 1931.

There are special forms of application which may be obtained from the Medical Officer of Health at the address given below on application either by post or personally.

Canvassing is prohibited and will disqualify.

(Signed) HUGH GREEN, Town Clerk.
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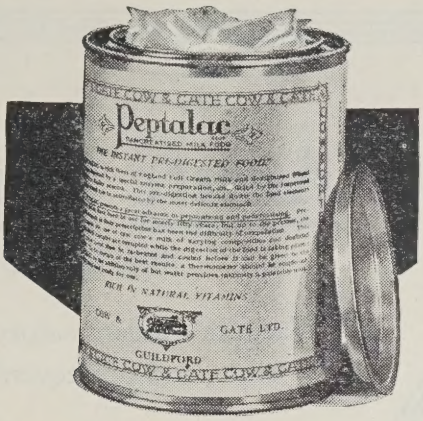

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